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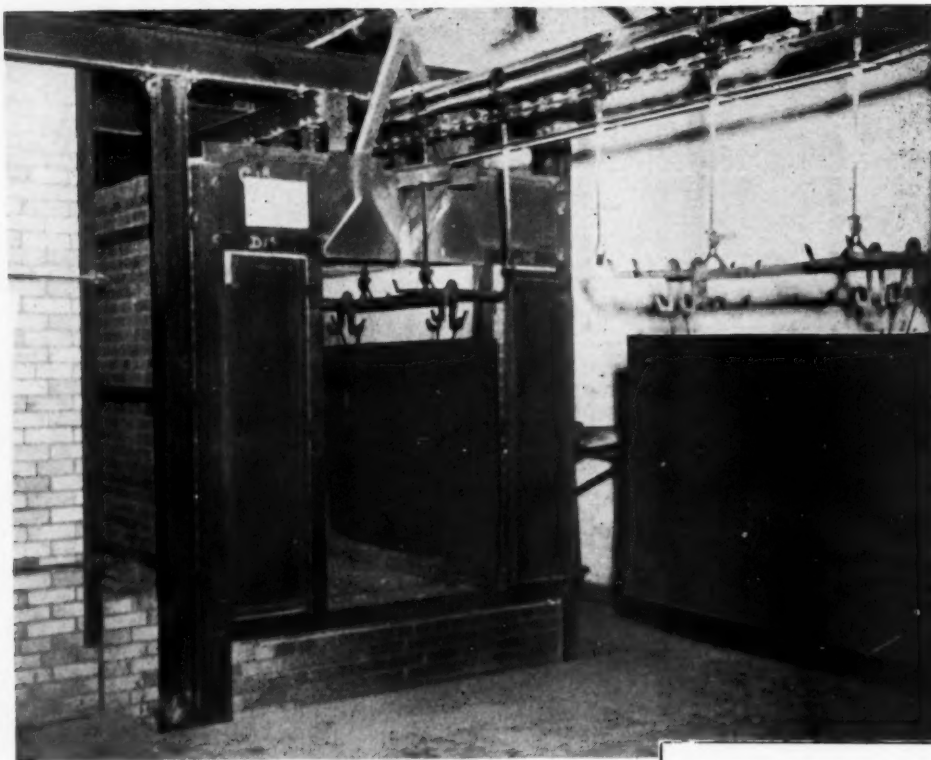
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finish

ceramic finishes on metal



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TYPICAL BOLAND IN-
STALLATION AT
ATLAS ENAMELING
COMPANY, ST. LOUIS,
MO.

REPRODUCTION OF A
PATENT DRAWING
SHOWING THE PRIN-
CIPLE OF THE
"FLOATING ROOF,"
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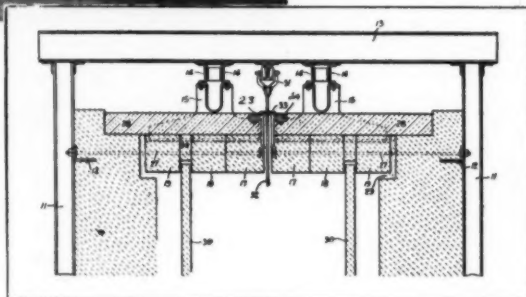
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NO. 10, A COLORFUL
PRESENTATION ON
FURNACE DESIGN.



ALBERT J. BOLAND COMPANY

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DESIGNERS AND BUILDERS OF CONTINUOUS AND BOX TYPE ENAMELING FURNACES

THE Finish Line

If you were drifting along in a row boat in the middle of Lake Catherine with only a pair of swimming trunks, a corn cob pipe and a portable typewriter to keep you company, what would you select as an appropriate topic for an editorial?

We could talk about the kitchen in our host's summer home with its electric range of a vintage which sports an oven door as the only P.E. on the range — it's still going strong after many long years of service — or — we could talk about the enameled sink or kitchen table, both of which are none the worse for years of continued use — or — we could take a tip from a bit of conversation at the breakfast table concerning a leak in the exhaust pipe on the speed boat and talk about Marine uses for porcelain enamel. P.E. has already proved itself for use on aircraft exhaust systems, and is also well on its way as the logical protective coating for exhaust systems for boats.

We could but we won't

We could discuss these things, or we could just skip the editorial entirely and enjoy a beautiful day on a smooth lake amid ideal surroundings for a weekend "rest" — but we won't — we will go back home to the kitchen and talk about something that has been bothering us for some time — an outstanding weakness in the present-day, *modern* kitchen. It's the cabinet top or "work surface."

Good, but not good enough

When we furnished our kitchen — it's now almost eight years old — we purchased everything with a view to getting *lasting* satisfaction. The porcelain enameled refrigerator, stove and other appliances are, from all indications, just as good now as the day they were installed. The factory built wall cabinets, with their advertised five coats of baked finish are still very presentable — but — let's take a look at the work surfaces.

One of the competitive materials

The work surfaces for these cabinets are very well constructed. For example, the enameled sink was shipped to the cabinet factory so that it could be veneered "into" the assembly before installation. The "rub" comes in the "impregnated wood" work surface which looked so satiny smooth when new, but which is now a definite

eyesore in the kitchen and a source of constant irritation to the lady of the house.

These special processed woods and veneers are one of the touted competitors for porcelain enamel along with linoleum, plastics, etc. Our cabinet tops are still strong and well constructed — but — the surface just won't "take it." At present the field is wide open for these competitive materials because porcelain enamel has never been adapted to the job.

We can offer what is needed

Some of the important requisites for this use would seem to be: A surface that is highly resistant to heat, scratching, wear and, above all, one that is easy to keep clean. The finish should not only be attractive originally, but should retain its original surface color and texture. Porcelain enamel has all of these qualities and more — but — it will have to be "engineered" to the job.

First of all, we want to make it clear that we are not discussing the conventional enameled table top, thousands of which are used for kitchen and breakfast tables and kitchen cabinets. We are referring only to the work surfaces of the kitchen "ensemble."

One possibility lies in the use of flat sheets veneered to a plywood base (for both solidity and sound deadening) with a stainless steel or other stain resisting metal trim.

To this suggestion, one porcelain enameler raised the objection of high cost. We would point out that in many instances the best of the work surfaces now offered are a veneered product — but — they employ materials for the protective surface other than porcelain enamel.

An opportunity worth considering

We believe that the manufacturer of quality cabinet ensembles who works with his enamel supplier to design a suitable porcelain enameled work surface of the type described, for use on his high quality lines, will find a ready market. In addition, the "good will" value among buyers will increase with each year of service.

Dana Chase

Editor & Publisher

VITREOUS ENAMELING Made Easier by INLAND RESEARCH

The most recent product to come from the Inland research laboratories is TI-NAMEL—the new vitreous enameling alloy steel to which the cover coat, in white or any shade, can be applied directly to the base metal.

When you try Inland TI-NAMEL in your own shop you will learn at first hand how it will cut fabrication and enameling costs, and result in products of superior finish and longer service life.

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Inland TI-NAMEL is the modern base for vitreous enameled products of greater eye appeal and for broader markets. Write for the new TI-NAMEL Bulletin.

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INLAND TI-NAMEL

Western Stove Company builds

"tools" for war — and plans for post-war

a war production story plus an outline for expanded enameling activity

By Gilbert C. Close • LOS ANGELES CORRESPONDENT FOR FINISH



After "V" day in Asia, management and personnel of the Western Stove Company, Culver City, California, will be able to remember with pride a wartime production record that culminated when the company was awarded the coveted "E" flag in recognition of its efforts. This achievement is further high-lighted by the fact that many of the war products turned out were, in the beginning, entirely unfamiliar to this organization whose peacetime efforts are dedicated to the production and enameling of various home appliances, and to the fulfillment of certain enameling jobbing contracts.

Tools for war

The war products flowing from the production line, shops, and enameling furnaces at Western Stove are not supplementary in nature, but are the actual tools being used to make this world safe for democracy. Bomb nose fuse seats, wing-spar assemblies for the lightning-fast A-26 attack bombers, powder cannisters to contain the powder charge for the 155-mm "Long Tom" field guns that blasted their way to fame on the Italian front, and enameled stacks to withstand the white-hot exhaust of airplane motors as destruction is rained on enemy territory. In addition to this impressive list, a well-earned quarterly material allotment has permitted the company to produce hundreds of wartime enameled gas ranges to help relieve the crisis of curtailed civilian production.

Prior to the war, the enameled gas range was the company's leading

product. Plans for the post-war era incorporate expanded production in the home appliance line. In a recent issue of "The Western Front," weekly employee paper, company President Henry Honer expressed complete confidence in the future of his company in the enameling industry. "We confidently expect that as time for complete reconversion approaches, we at Western Stove will be in the forefront of civilian production," President Honer said. "There will be more and more 'Western-Holly' gas ranges in the homes of tomorrow. Their manufacture, when it does begin, will require more and more workers . . ." These are not idle words. Western Stove is preparing for the future with a substantial building program already well under way.

The company's war products can be divided into two classes — those requiring the facilities of the company's enameling set-up, and those which made necessary installation of new equipment and adoption of new production methods. Of the latter products, the A-26 wing-spar assemblies and the M-16 powder cannisters are currently occupying major attention.

The powder "can" line

The employees of Western Stove speak with pride of their "can" line. They are amply justified in doing so. The production line turning out the M-16 powder cannisters is a model of speed and efficiency. There are no bottlenecks on this line, no prolonged inspection delays where half-finished parts are racked in bins to gather dust. When raw material enters the M-16 production line, its next permanent stop is the box car that will

start it on its journey to the various fighting fronts of the world!

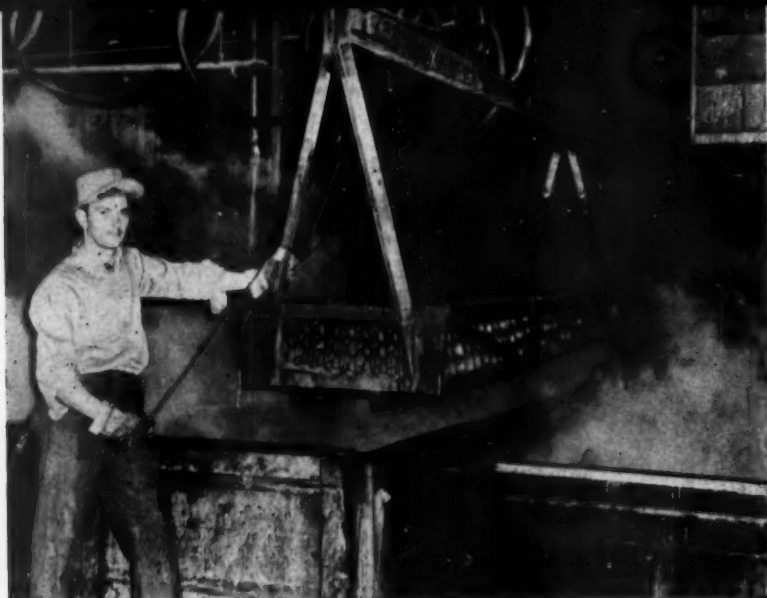
The 1020 (low carbon) steel used for the cannister body is blanked from a flat sheet, then formed on a roll press. Immediately after this operation it is placed on a conveyer that carries it past a battery of seam- and spot-welders. The cannister is removed from the conveyer at each machine only long enough to perform a specific fabrication operation, then is replaced to move on to the next. At intervals along the conveyer line, the few machined parts that are required are added. Such parts are turned out in the company's well-equipped machine shop division.

When assembly is complete, each of the cannisters is pressure-tested under water. Specification requires that the cannisters be tested at 3 psi air pressure with no evidence of leakage, but 15 psi pressure is employed to make doubly certain that the "cans" are air- and moisture-tight. From testing, the cannisters move along the conveyer line to the finishing department.

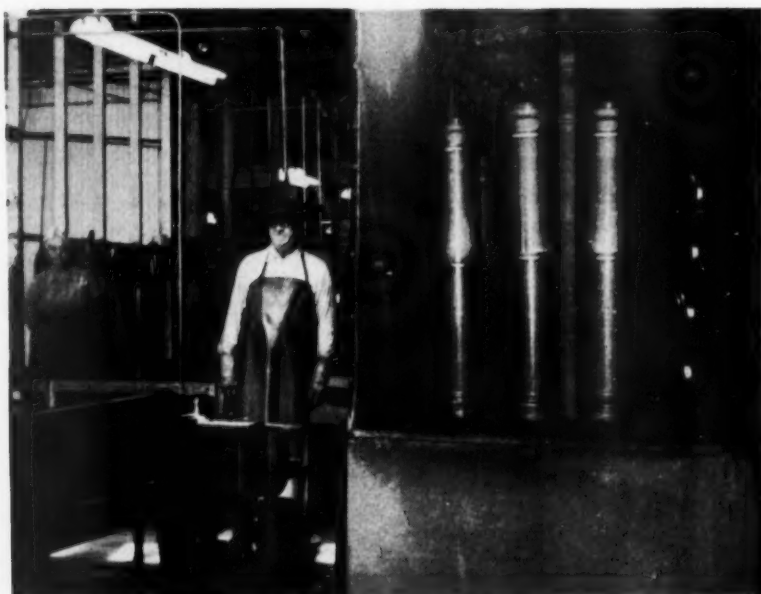
Pressure jet cleaning

The cleaning and finishing equipment is arranged for maximum production with minimum effort. A continuous conveyer chain carries the "cans" and can lids through a spray chamber where grease, oil and other surface contaminants are removed by pressure jets of hot alkaline cleaner. When the cannisters emerge from the cleaning chamber, they are transferred to another conveyer that carries them through the dip tank, thence through a 90-foot baking and drying oven.

Rust-inhibiting zinc chromate paint

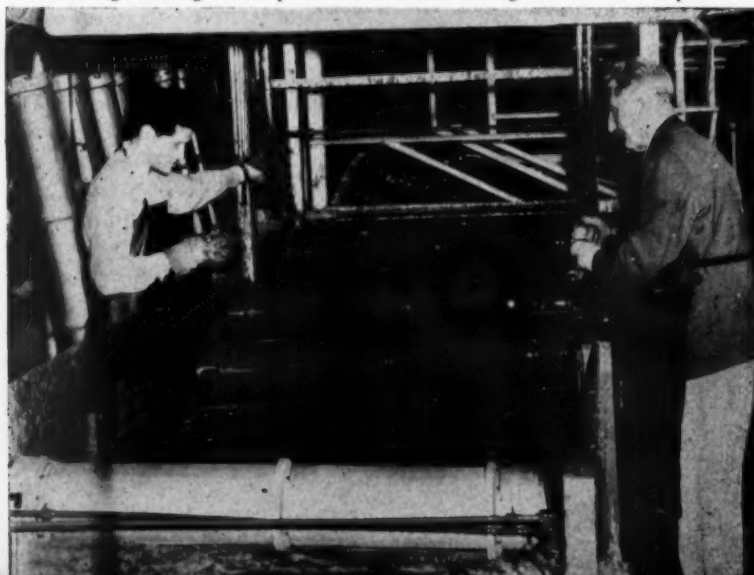


A load of pump parts ready for the hot sulphuric acid pickling bath.



Powder cannisters enter the cleaning chamber on a continuous conveyor.

"Cans" go through the dip tank. Automatic tilting removes excess paint.



is employed in finishing. The cannisters are conveyed through the paint bath in a horizontal position, but upon emerging are automatically tilted in both directions to assure that all excess paint will drain from the interior. The same conveyer that carries the "cans" through the dip tank, continues onward for a 35-minute trip through the baking and drying oven. When the painted and dried cannisters emerge from the oven, they are transferred to another conveyer chain that carries them directly to the doorway of a waiting box car.

The efficiency of this small but well-managed production line is best emphasized by production figures. Though the actual output in number of cannisters per day is a military secret, it is permissible to reveal that during peak production, with the line in operation 24 hours a day, more than 60 cannisters were produced for each 24-man-hour period.

Enameling department used for war production

Bomb nose fuse seats and enameled exhaust stacks for airplane motors are the two war products that have played an important role in Western Stove's enameling division. No actual fabrication work is accomplished on the bomb parts. These parts are a product of deep-draw forming, and are received at Culver City in the semi-formed condition. The company's part in the picture is to re-anneal the parts, softening the metal sufficiently for the finish forming processes.

This annealing is accomplished in the enameling furnaces. The 10 gauge 1010 low carbon steel used in the parts requires heating 40 minutes at 1600° F. for a complete anneal. This requires raising the furnace temperature from enameling heat (1520° - 1540° F.). After annealing, the parts are pickled in the same tanks employed for pickling the ordinary production enameling iron. These tanks, 13 ft. long, 5 ft. deep, and 3½ ft. wide, contain a 7% solution of H₂SO₄ (sulphuric acid) at a temperature varying between 140° and 160° F.

Enameled exhaust stacks by the thousands

In conjunction with the bomb parts, thousands of exhaust stacks have been processed through the company's enameling division. A single ground coat of special high-temperature, blue-black enamel is applied to the stacks. Exhaustive laboratory tests have proved that stacks protected and coated in this manner are more resistant to heat corrosion than stacks fabricated from stainless steel. At the same time, thousands of pounds of stainless steel have been saved for other critical uses.

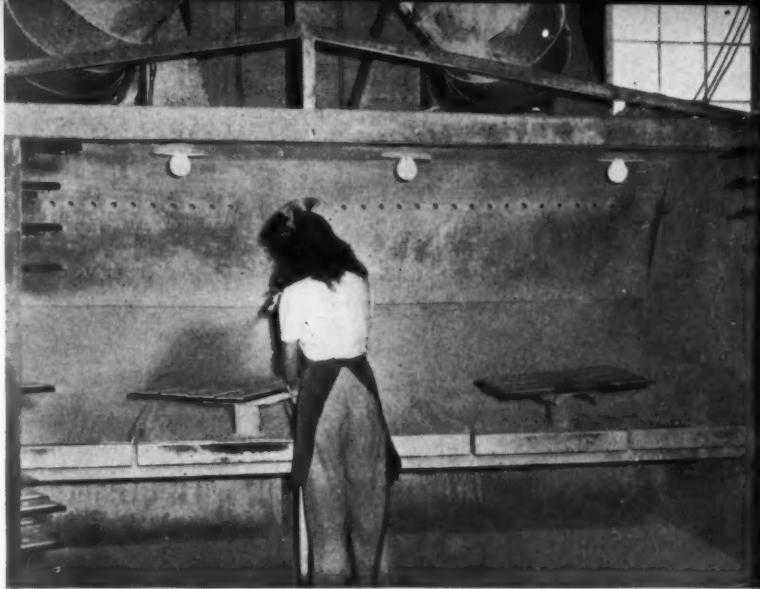
Despite extensive war production, this company has not relaxed efforts to keep its enameling division working smoothly and prepared for post-war production. By such efforts, they have greatly simplified impending reconversion problems. Equipment is on hand and in working condition; key personnel and enough experienced workers are available to form the nucleus of a greatly expanded civilian production force. The "Go" sign at Western Stove will not mean starting from scratch, but a gradual absorption of reconverted facilities as war production tapers off.

A "complete" enameling plant

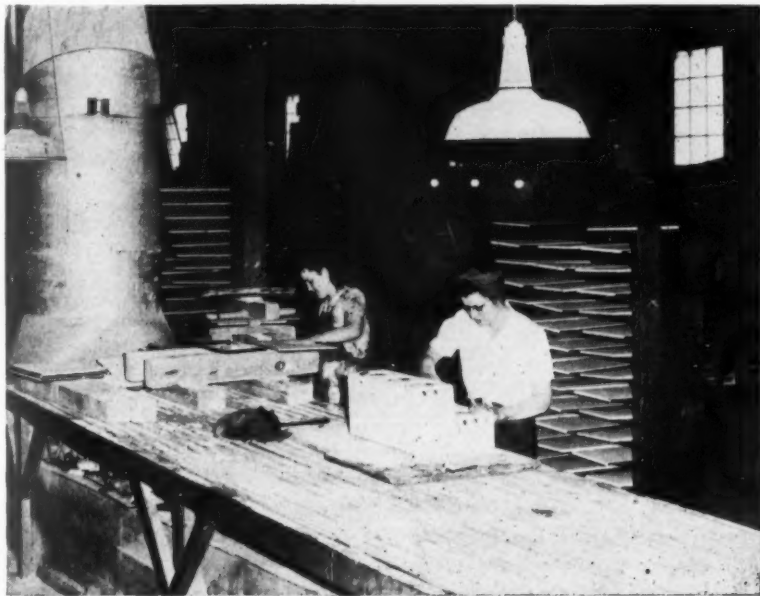
The plant layout for enameling includes all facilities from foundry to salesroom. This self-sustaining feature practically eliminates any dependency on sub-contractors, and provides the ultimate in control over production and product quality.

The foundry, apart from the enameling building, includes complete equipment for core and pattern production, melting furnace, and casting facilities. Very close tolerances must be maintained on such critical components as gas range burners, and as all cast home appliance parts are relatively fragile, optimum casting quality must be maintained in all pouring operations. The foundry is capable of handling special problems as well as routine production, thus simplifying special jobbing contract work.

The machine shop and sheet metal shop, much like the foundry, are complete units, equipped to minimize the

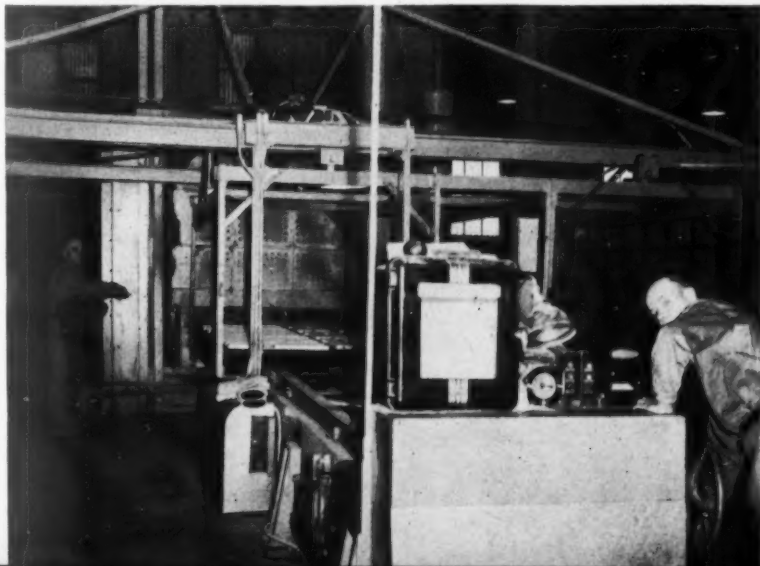


Well lighted and well ventilated spray booths for enamel application.



This down-draft brushing table removes the danger of air contamination.

Box type furnaces are used currently. The continuous is on the way.





Left: Gas ranges are the principal peacetime product of Western Stove.

Below: The start of the company's expansion program. One of the largest continuous furnaces on the West Coast will soon be resting on this spot.



necessity of sub-contractor work on either production or jobbing units. Heavy presses, shears, forming equipment, automatic screw machine units, lathes and other metal working tools are available as required. The products of this division, along with those of the foundry, constitute a steady flow of carefully controlled products to the enameling division where gas ranges and other appliances receive the type of coating that makes them resistant to years of active service.

Despite current sharply curtailed production, it is immediately evident that the enameling division is well equipped to handle a huge volume of material. Spaciousness interspersed with substantial production facilities marks the entire layout. Equipment to serve every conceivable need in enameling is available and in perfect operating condition.

The pickle room equipment con-

sists of the usual battery of tanks required for the cleaning and pickling operations necessary for enameling. An overhead conveyer carries the conventional pickling baskets through the various solutions. This equipment is located in a canopied shed adjacent to the main building so that fumes are quickly dispelled into the outside air.

The frits used by Western Stove are of the purchased formula type. The mill room, complete with control facilities, offers the optimum in frit consistency control. Frit application is by spray or dipping, depending upon the size and convenience of handling the part. The spray booths are large, well-lighted, and ventilated by a suction blower system. Mobile storage and drying racks facilitate handling of parts in and out of the booth area. The dip tank operates in conjunction with a gas-fired drying table.

The furnaces currently in use are box-type with manually operated controls and equipped with remote pyrometric temperature indicators. A large, centrally located down-draft brushing table provides brushing facilities without danger of air contamination, distinctly advantageous both from production and personnel health standpoints.

Expansion program started

The confidence of the company in the future of the enameling industry is best expressed in the expansion program that is already in progress, and which will be completed as soon as priorities permit. This program includes not only a substantial addition to building facilities, but installation of one of the largest continuous furnaces in the West Coast area. Foundations for the furnace installation are already poured, and layout of the new building area is well under way.

The new furnace, an 83-foot U-Type, will have 170 feet of traveling space with approximately 42 feet of hot zone travel. This new set-up will multiply manifold the present furnace capacity.

Company post-war plans include not only the resumption of manufacture of gas ranges but other types of home appliance products as well. In addition, their facilities will be for specialized jobbing work. Mr. W. Bauer, superintendent of the enameling division, is fully convinced the jobbing contracts will play a large part in post-war enameling.

"Enameling is a specialized industrial function," Mr. Bauer contends, "and is not to be confused with a production line process that may be installed and used at will. Thus, other types of manufacturers who wish to have minor product components enameled will have to depend upon the established enameler to perform this function for him."

Mr. Bauer is also convinced that architectural enameling will find wide play in the huge building program certain to follow the present conflict. Building exteriors as well as interior decorative and utilitarian products will feature this trend.

California "packaged homes"

offer porcelain enamel opportunities

By Elsa Gidlow • SAN FRANCISCO CORRESPONDENT

Exclusive
feature
finish

Just the other week a truck and trailer quietly set down some odd-looking flat packages on a vacant lot in the picturesque town of San Anselmo in the Coastal hills of Marin County, California. A few days later, people driving by on the highway rubbed their eyes but still saw a modern bungalow on the spot. The solid new house had grown there, practically overnight, the first of thousands of packaged homes to be sold all over the United States by Standard Engineering Corporation of San Francisco and San Rafael, California. The San Anselmo model home is a sample — a pre-view — of this company's "pre-bilt" houses, and it is worth examining because it, and others like it, offer untouched opportunities for the porcelain enamel industry.

The San Anselmo house does not have much porcelain enamel in it, but — *it could have*. A little questioning around revealed that some of those concerned with the designing and production of this company's

Editor's Note:

Many changes in home building may result from the "packaged home" idea—possibly some changes in appliance merchandising. On these questions there is wide difference of opinion.

If we are to judge from the number of companies, some of them with extensive resources, that have indicated their intentions in this new movement, it is easy to envision an impact with far reaching effect. Future plans should include this possibility.

packaged houses have never been "sold" or "told" concerning the advantages and possibilities offered by porcelain enamel in modern home fabrication. Because one of the aims of pre-fabrication is to eliminate the hazards of local labor deficiencies, supplying citizens in the most out-of-the-way communities with foolproof and easy-to-assemble structures, porcelain enamel's salesmen the country over should have an interesting educational job ahead of them and it behooves them to know what's doing and what's planning in the "pre-bilt" field in all parts of the country.

Standard Engineering's model

home at San Anselmo is a five-room, two-car garage unit, designed to be delivered by truck-trailer to the purchaser's lot or homesite, packaged and ready for assembly. It requires one day to assemble and set up.

A pre-view home

This first example of what the Corporation plans for postwar in the prefabrication field is a pre-view in more senses than one. It employs materials available now, and does not necessarily specify what will or should be used in the later models. V. E. Asbell, who is vice president of Standard Engineering Corporation, says he expects the postwar versions of current designs to use many materials not now available.

In other words, they are open to suggestion.

The San Anselmo model is a one-floor bungalow type structure of a style popular on the West Coast. It lets in lots of sun and light, and is windowed to take in a maximum amount of view (view being a visual commodity popular in California and played up by real estate agents).

When they use the term "pre-bilt,"



This pre-built "packaged home" includes five rooms and a two car garage. It is "finished" (take it literally — it means painted too) in the factory and delivered to the site complete and ready for assembly.



Three interior views of the San Anselmo model home. The kitchen has porcelain enameled sink, refrigerator and stove. There are other possibilities here for enameled.



Standard Engineering architects and producers mean to indicate that their homes are completely finished at the factory, including painting and decorating, and are delivered to homesite ready for immediate assembly.

Why not porcelain enameled chimneys (flues)?

There is a point, however, that will strike the eye of the good porcelain enameled who studies the photographs of the home reproduced here. He will observe that it has the fireplace most home lovers desire, and that the chimney visible above the roof is built of bricks, thus being one element of construction not coming under the "pre-bilt" classification. The kitchen flues offer similar opportunities, and a member of the firm of Standard Engineering with whom the writer discussed the notion, thought it was a "swell idea" to have the piping from the porcelain enameled kitchen stove also of porcelain enamel in the post-war homes, and not those nasty black pipes, still an eyesore in many a good kitchen. Even the ordinary white kitchen-stove-piping turns yellowish, so there would seem to be a selling point there.

For those who may be interested, and draw some further ideas for the use of porcelain enamel, the following structural details on the San Anselmo home may be mentioned. The structural design utilizes a laminated plastic system of construction. So far, the main materials used are processed wood put together under pressure, using some new developments in synthetic resin binders. Walls and roof are supported by laminated three-hinge arches, to which standard interchangeable walls and roof panels are applied.

This house has a number of features about which its designers are proud: they say their system permits of absolute flexibility in the arrangement of interior partitions, and of window and door openings in exterior walls, so that individual owners may vary these factors to suit their taste or the needs of the locality. This flexibility will prevent too wearisome standardization as well.

to Page 50 →



Ada Bessie Swann is a well-known Home Economist in the gas and electric utility field. For fifteen years she was director of the Home Economics Department of the Public Service Gas and Electric Company in Newark, New Jersey.

During that time she was the pioneer organizer of Home Service Departments in the gas and utility industries, having been the first chairman of the Home Service Committee of the Residential Sections of the American Gas Association and the National Electric Light Association, now the Edison Electric Institute.

Miss Swann's work has constantly been that of serving the customer. She has devoted her entire professional career to knowing more about Mrs. Homemaker, finding out her wants, and organizing educational programs to help her in her tasks of better homemaking. She continues this work as Home Economics Consultant with Crowell-Collier.

PHOTO BY GEORGE MAILLARD KESSLER

HOMEMAKING AND APPLIANCES

A psychological survey

a new type of survey that should interest every appliance manufacturer

By Ada Bessie Swann • CROWELL-COLLIER PUBLISHING COMPANY, NEW YORK, NEW YORK



Many studies have been made to determine what women want in electrical household appliances after the war. To further contribute to that reservoir of information would seem to be merely adding drops to the ocean.

There is, however, a definite need of further study of the psychology of housekeeping in general. Especially with a view to finding better ways to sell appliances to lighten the physical strain and improve the efficiency of housework.

As woman's interests broaden, the value of her hours increases. Domestic help, diminished by the war, may never return to its pre-war abundance. A greater need for electrical household services is apparent, along with an expected postwar increase in the production of such devices.

A study in psychology

With these premises in mind, the Crowell-Collier Publishing Company engaged the services of the well-known psychologist, Dr. Ernest Dichter, to make a study of the psychology of housekeeping—a survey of the attitude of women towards household appliances—generally and specifically.

Dr. Dichter's work in many other fields, applying psychology to the marketing of consumer products, is well-

known. His work on this project provides an entirely new approach to the sale of electrical appliances. It included a technique which, while not new in other fields, is undoubtedly coming to play an increasingly important role in commercial research.

There are three phases to the present survey, as follows:

- I. Dr. Dichter's preliminary study in which he arrived at certain basic psychological concepts. (These formed the foundation for a nation-wide investigation to give statistical weighting and confirmation to his findings.)
- II. The national sampling of homemakers throughout the nation, along the lines previously determined by Dr. Dichter, was carried on by especially trained investigators in personal interviews under the direction of the C. C. Chappelle Company of Chicago, Illinois.
- III. In application of these tests to the Woman's Home Companion market specifically, we conducted the same investigation among the Companion's Reader-Reporters—a panel group of 2000 readers who constitute a cross-section of the total readers of the magazine.

Know your customers by their attitudes

Marketing executives are accustomed to thinking of their prospects in broad general categories—for instance

by sales territories
by age groups
by income strata, etc.

This survey departs from this usual stratification plan and discusses prospects from the psychological viewpoint. Dr. Dichter's study clearly indicated that *a woman's attitude towards housekeeping appliances cannot be separated from her attitudes towards homemaking in general.*

Through a series of case studies of women of different ages, education and economic levels, carried out by field workers trained in the psychological technique, Dr. Dichter found that there are three distinct and basic types of women; these types are described by him as:

The True Housewife whose interests are centered in her home. Her chief happiness is derived from running her home.

The Career Type or potential career woman who hates housework. This is the woman who thinks she would be successful at any other job but housekeeping.

The Balanced Homemaker who does both housework and outside work or is capable of doing both.



THE CAREER WOMAN

The true housewife type

From the psychological point of view, housekeeping is this woman's dominant interest. Advertising and selling should be adjusted to her viewpoint. She takes the utmost pride and satisfaction in maintaining a comfortable and well-run home for her family. Consciously or subconsciously, she feels that she is indispensable and that no one else can take over her job. She has little if any desire for a position outside the home, and if she has one it is through force of circumstances or necessity.

Her reaction to appliances is somewhat mixed: She appreciates the advantages and help they offer, but is inclined to be critical or skeptical. She may even fear that they will render unnecessary the old-fashioned way of doing things that has always suited her. In reply to a question regarding appliances, one such woman said:

"Oh, I don't really need anything. That's up to the people who get up ideas. They always have something new. You can get a pressure cooker that cooks a chicken in five minutes, but is that healthy? The more you have, the more there is to go wrong too. Of course, conveniences are nice and nobody can really appreciate a washer who hasn't scrubbed their hands off on a washboard. But you take a wood stove — you can't beat a wood stove for a baker. It's the dry heat; gas heat is so damp. Well, the new things are quicker any day, even if they aren't quite as good."

Another:

"I don't think there is any way to make house-



THE TRUE HOUSEWIFE TYPE

work easier for myself, because I don't believe that a machine can take the place of hand-work. A machine cannot think and you can't rely on it; it doesn't do as thorough a job as a person. Oh, it might work easier in some instances, but it can never replace a human being."

And this:

"Do you really believe a machine gets the laundry clean? It is never as white and beautiful as when it is done by hand; it always comes out sort of grayish. Besides it ruins the laundry. If you ask me whether the shorter life of the laundry pays in saving labor, I never looked upon it that way. It just hurts to see it go faster."

It is this reluctance to accept new devices that has to be recognized and overcome lest it leads to resentment and unreasonable fault-finding.

The number of women in this group has undoubtedly diminished in recent years and will probably continue to do so, as new fields are now open to women. Many have come to realize that they will be better off if they are at least capable of holding down a job outside the home if the necessity arises. Nevertheless, this group still predominates in the appliance market; we find that it represents 51% of our total sample.

The career woman (Or would-be career woman)

The term applied here is not meant to indicate that this woman is necessarily a job-holder. Many in this group have never actually worked but feel sure that they would be happier if they were not "imprisoned" in their homes, and they do not believe that a woman's place is primarily in the home. They perform household duties under protest, inwardly if not openly, and feel that in doing them they are wasting their energies and talents.

This state of mind is particularly significant for anyone who would sell such a woman appliances, because her demands and expectations regarding them are apt to be unreasonable and unrealistic. What she really wants is to be able to press a button and, presto, find all the housework done. Her attitude is best exemplified in her own words:

"I think housekeeping is a horrible waste of time. If my youngsters were old enough and I were free to leave the house, I could use my time to better advantage. If my family's meals and laundry could be taken care of by a competent person I would be delighted to go out and get a job."

Another speaks:

"I want a mechanical maid. That's what I want —



THE BALANCED HOMEMAKER

a robot. If they can make other things, they can make them too."

* * * * *

"I can tell you my ideas about housework in three words: I hate it; I've always hated it and can't remember ever feeling any different."

It is plain that the attitude of the Career Woman is not a very healthy one. The point to bear in mind regarding them is that, while they buy modern appliances, they are not the ideal type of customer and need a good deal of education in their use. Among the nearly 2,500 women questioned in our national sample they comprise the smallest group: 11% of the total.

The balanced homemaker

As the title implies, we have here a type that stands midway between the two extremes. This woman is, from the market standpoint, the ideal type. She has an interest both in the world outside the home and in managing a well-run household. She has confidence in her ability to do and enjoy either or both and hence is endowed with a well-balanced personality. If she is keeping house she is apt to have some outside work, whether paid or voluntary, or has held a job before turning exclusively to homemaking.

The Balanced Homemaker has an intelligent and realistic attitude toward mechanical appliances; she readily accepts the help they can give but does not expect them to do the impossible. Obviously, then, the women in this group are the easiest to "sell" and are the manufacturer's best prospects. In the national survey they were found to be 31% of the total. But among the readers of Woman's Home Companion this type is more numerous.

Since the Balanced Homemaker represents the market with the greatest future potential, it would be to the advantage of the appliance manufacturer to make more and more women aware of the desirability of belonging to this group. He can help to educate them through advertising to the idea that it is possible to have outside interests and become alert to wider intellectual influences without forfeiting the well-being of home and family. Furthermore, the art of good homemaking — as distinct from good housekeeping — should be the goal of every normal woman, and to achieve it broader outside interests are not only desirable but essential.

There are several reasons why this group is increasing in number. First, it is becoming more difficult to shift household tasks to servants, while at

to Page 48 →

FACTS ABOUT THE SURVEY...

	National Sample	Companion Panel
SIZE OF SAMPLE	2,467	2,000

Distribution of Interviews:

BY GEOGRAPHIC AREAS:



New England	7%	8%
Middle Atlantic	25	22
East North Central	22	26
West North Central	9	12
South Atlantic	12	9
East South Central	6	4
West South Central	8	6
Mountain	3	3
Pacific	8	10
	100%	100%

BY CITY SIZE:



500,000 and Over	21%	19%
100,000-500,000	17	19
25,000-100,000	14	18
10,000-25,000	9	11
2,500-10,000	12	14
Under 2,500	27	19
	100%	100%

BY INCOME:



A—\$5,000 and Over	6%	20%
B—\$3,000-\$4,999	15	38
C—\$2,000-\$2,999	26	25
D—\$1,000-\$1,999	32	14
E—Under \$1,000	21	3
	100%	100%

BY MARITAL STATUS:



Married Women	87%	83%
Single Women	13	17
	100%	100%

BY AGE GROUPS:



18-24	11%	16%
25-34	27	30
35-44	25	27
45 and Over	37	27
	100%	100%

BY PSYCHOLOGICAL TYPES:



True Housewife	51%	17%
Balanced Homemaker	31	74
Career Woman	11	8
Unclassifiable	7	1
	100%	100%

WHEN MADE	July-Aug. 1944	June-July 1944
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Hot weather suggestions . . .



DRESS PROPERLY. The worker who dresses **RIGHTLY** can endure high temperatures better than the worker who dresses **WRONGLY**. The **RIGHT** way is to work in a shirt or undershirt. The **WRONG** way is to discard every strip of clothing above the waist.

TAKE SALT. Excessive perspiration greatly reduces the sodium chloride content of the body. Unless it is replaced, heat sickness in some form or another may occur. Either salt tablets, taken in accordance with instructions, or treated water are helpful. Further assistance can be rendered by eating and drinking the right foods.



keep floors clean



GOOD HOUSEKEEPING is important to workers' health. Rest rooms or wash rooms particularly should get constant attention. Clean-up campaigns are good, but a regular cleanliness program is better. Above all, floors should be kept clean.

What furniture manufacturers and retailers have to say about porcelain enameled table tops

results of a nation-wide mail survey and a personal survey of the New York and Chicago markets

By Lee R. English • WALKER & DOWNING, PITTSBURGH, PENNSYLVANIA

WE recently conducted a survey for the Porcelain Enamel Institute, Washington, D. C., among leading manufacturers and retailers of porcelain enameled products as a part of the Institute's Market Development Program, now in its second year of successful operation. Although the survey was intended to cover mainly the table top branch of the industry, the facts revealed in many cases apply to practically all phases of the industry.

The complete survey included both mail coverage of leading table furniture manufacturers and important retailers on a national scale, and a personal survey among both manufacturers and retailers in New York and Chicago.

Since Porcelain Enamel has been almost completely off the market during the past four years, it was indeed gratifying to find the intense interest prevalent among those persons contacted in person, and the many firms who took the extra time to write accompanying letters with their questionnaires. In nearly every instance, the query "When are we going to get merchandise to sell—" was asked when we stated the purpose of our visit.

A complicated mail survey

One of the first principles of survey work, where a high percentage of returns are desired, is simplicity in the questionnaire. In this instance the questionnaires sent were comparatively complicated, both as to number and breakdown of questions and total length. Normally it would be desirable to confine a questionnaire of this nature to a single sheet. In the case of the P.E.I. survey, the manufacturers' questionnaire consisted of two full sheets and the re-

tailers' questionnaire two and one-half sheets. I mention this because in spite of this fact the returns were exceptionally high, being 55% on the manufacturers' mail questionnaire and 41% on the retailers' mail questionnaire. This in itself is an indication of strong interest in the subject covered.

Further, in planning the survey, the questions concerning porcelain enamel intentionally were listed low on the questionnaire, making the answers more apt to show the true picture.

Porcelain enamel the outstanding favorite

Although there are many interesting details in the replies from both manufacturers and retailers which it would be wise for table top producers to study in connection with their future manufacturing and selling policies, the most important single fact gleaned from the survey statistics is that 100% of both the manufacturing and retailing groups plan to use and sell porcelain enamel in the postwar period. Of equal interest is the fact that 98% of customers now buying tables are asking for porcelain enameled tops.

Manufacturers mail survey

While manufacturers indicated their outstanding preference for porcelain enamel, there are a number of other comments and facts contained in the survey that should be of interest.

In asking the question, "What finishes will you use for table and cabinet tops when production is resumed?", ten materials were listed.

In the answers to this question, porcelain enamel was the overwhelming choice of the first seven listed,

with plastics, "painted surface," linoleum, stainless steel, impregnated woods and aluminum following in the order of their choice. Glass and rubber "also ran."

Manufacturers were further asked to state the determining factors in reaching their decisions on materials. One man said: This plastic-surfaced plywood is cheap and attractive, and quite serviceable. It is being used by the Army Air Corps to a considerable extent.

Another said: We used porcelain before the war. There is nothing on the market to take its place. At least we have heard of nothing. We believe that time alone will give the answer, and we expect to furnish what the public decides it wants.

Another said: Color will be the determining factor.

Still another said: Linoleum has flexibility.

Following are a few of the comments in discussions of porcelain enamel:

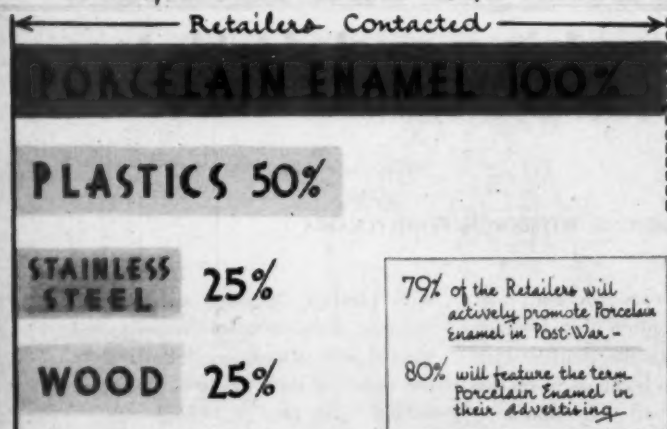
It has proven the best selling product in this field . . . Always has been best selling. Fabricate own tops and have enameling jobber finish them. Factories set up to produce in this manner within twenty-four hours . . . Porcelain for popular demand and price.

When the manufacturers were questioned in regard to their knowledge of improvements and developments in porcelain enamel, they expressed an eagerness to get all of the information possible on design and production improvements, new engineering developments and one-coat enamels.

When the manufacturers were asked their opinions on postwar demand of retail outlets for porcelain enamel versus other finishes, by far

TO RETAILERS

What table top materials will be most popular in Post-War?



the greater number indicated their belief that porcelain enamel would be in strong demand. There were, however, sufficient opinions expressed with regard to new or competitive materials to warrant consideration by the table top producer. Among the comments were these:

Plastics and impregnated woods are likely to be asked for, and if developed from a practical and economic standpoint to meet what the public new expects of them at near competitive costs, they will be a big factor We believe plastic tops will become a competitor of porcelain Polished stainless steel was gaining in popularity in the pre-war period, but high cost of this material still placed porcelain enameled steel table tops ahead Porcelain in low cost merchandise

and plastics in medium and high cost products Plastics because of the many uses workmen see around plants, women see in specialty goods.

In outlining the factors which have influenced manufacturers in choosing porcelain enamel in the past, the following were the principal points, listed in the order of the number of times each was mentioned:

Consumer acceptance; retailers preference; exclusive qualities of porcelain enamel (tied with retailers preference); better patterns and designs; competitive selling price; production uniformity; planned deliveries; and longer profit.

Criticism of table top manufacturers' policies was encouraged in the question, "Have you found any difficulty in working with porcelain enamellers?"

While many of the comments were complimentary, we select a few that might be termed constructive criticism:

Sold to every Tom, Dick and Harry — which was the cause of unfair competition and lowered, both in dealers and consumers minds, the true value of sets equipped with porcelain tops It is my opinion that porcelain enameled table top manufacturers must give more thought to materials of manufacture and design — sharp edges will have to go Tops should be so designed as to eliminate noise in use — and springiness.

A question on standardized labeling showed 75% of the manufacturers to be strongly in favor.

Suggestions were requested as to the sales promotion aids that would do most to improve the acceptance of porcelain enamel. Some of the leading suggestions included the following:

National advertising in our leading furniture and popular magazines Extensive advertising that would reach the ultimate consumer.

Retailers mail survey

The leadoff question in the retailers survey was: "What table top materials do you expect will be most popular in postwar?"

Here, as in the manufacturers survey, porcelain enamel was the outstanding favorite. Following in the order of their choice were: plastics; impregnated wood; stainless steel; painted surfaces; glass; linoleum; and aluminum. This offers an interesting comparison with the order of the listing under the lead question in the manufacturers survey.

In answer to a question regarding the outstanding characteristics of the various materials which lead to their selection, a few of the comments concerning porcelain enamel were:

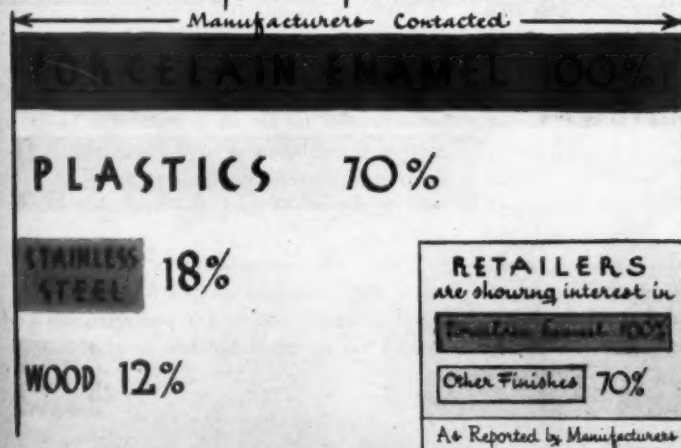
Durability; Easy to keep clean; Beauty and long wearing qualities; Customers' choice; Economy; and Constant demand.

The table top producer might well take cognizance of a few selected comments pertaining to competitive materials:

AUGUST • 1945 finish

TO TABLE MANUFACTURERS

What materials will you use for Table Tops and Cabinet Tops when production is resumed..



Impregnated wood—Beauty and durability, resilience It will be a new product and will be purchased by consumers who want natural wood.

Stainless steel—Modern appearance pre-war publicity offers good selling advantage.

Linoleum—Quiet working top Noiseless.

Plastics—Newness in selling points Smoothness Soft, warm colors and new finish will sell easily.

In answer to a question on the retailer's intentions when porcelain enamel table tops are again available, 100% indicated that they planned to handle them, and 78% indicated their intention to "actively promote" their sale.

One large retailer reported, in part, "Shortly before the war we actively promoted the porcelain top sets and in the fall of that year we tripled our business over the spring. The next year we more than doubled that figure and each year kept increasing our sales of porcelain top sets. Personally I certainly am a strong booster for porcelain tops because of the customer demands and because I see a very fine future for them."

When questioned in regard to previous experience with porcelain enamel, a high percentage indicated the tops to be "entirely satisfactory."

Among the many constructive suggestions were the following: More modern decorative effects Judicious use of color Eliminate noise Make it absolutely acid proof Have assemblies of tops made stronger or sturdier bases—designs improved.

When questioned concerning the qualities of porcelain enamel which salesmen found most effective in selling, the following were mentioned: (They are listed according to the number of times each selling point was mentioned.): Cleanliness; Acid resistance; Burnproof; Attractive designs (tied with burnproof); Brilliant colors; Economy; and Scratch resistance.

In stating their reasons for promoting porcelain enamel, retailers gave: Price; Larger unit sales; Profit; Consumer acceptance; and Durability as

AUGUST • 1945 finish

CUSTOMER DEMAND

As reported by Retailers

← RETAILERS CONTACTED →

98% OF THEIR CUSTOMERS ASK FOR P.E.

38% ASK FOR
OTHER MATERIALS

their answers. Consumer acceptance rated first in these, with price as second in importance.

When questioned concerning improvements which might be expected to lead to greater sale of porcelain enameled tops, the answers included: Improved color combinations; Improved designs and patterns; greater variety of size; and Prompt deliveries.

A few comments: Should be level and reinforced against springy pressures If bases were smarter looking—no trouble with tops Identify the quality. Many small competitive stores offer sales in normal times on much inferior quality.

We really opened the door for comment when we asked the question: "What 'point of sale' or sales promotion aids would help you sell

more porcelain enamel table tops or cabinets?"

A few of the comments: Stressing the acid and burn proofing and durability of porcelain enamel Advertising More color combinations and sizes Booklets attached to each piece of goods telling how to care for and treat not only the top—but the rest of the set or cabinet Greater promotion on the part of porcelain enamel manufacturers Tops should carry attractive label stating advantages Manufacturers display that would graphically show its qualities Acid-resisting floor display similar to refrigerator display Envelope stuffers to put in letters to our customers.

The question on the trend of in-

to Page 48 →

ADVERTISING

MANUFACTURERS Recommend that
Porcelain Enamel Advertising be directed to

GENERAL PUBLIC 81%

RETAILERS 30%

MANUFACTURERS
6%

The characteristics and qualities of Porcelain Enamel

colorful, durable, versatile and economical

THE illustrations on these two pages were reproduced from the art work from two pages of the colorful, new 16-page general sales brochure recently issued by the Porcelain Enamel Institute.

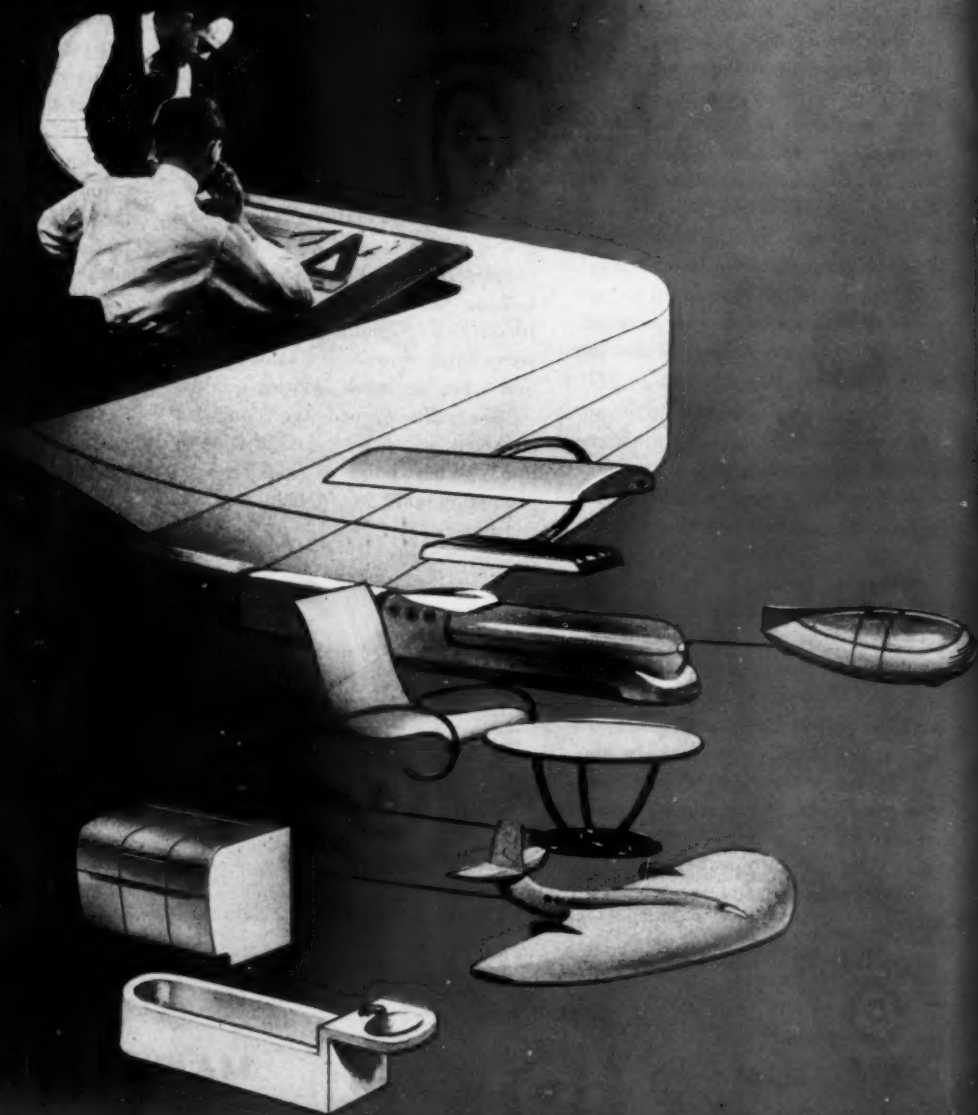
Though the brochure is general in nature, it contains material of interest for every manufacturer or user of porcelain enamel and particularly for those responsible for the sale of porcelain enameled products. It shows how modern porcelain enamel provides greater versatility to the designer, profit to the manufacturer, salability to the dealer, and utility value to the user. It describes and illustrates some of the outstanding selling points such as: Weatherproof Finish—Attractive Colors—Easily Cleaned—Heatproof—Extremely Hard—Resists

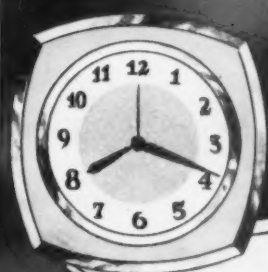
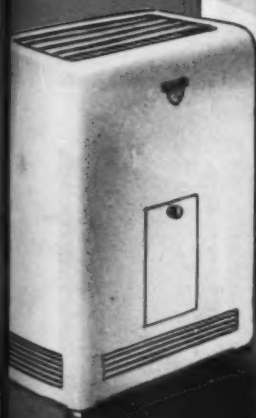
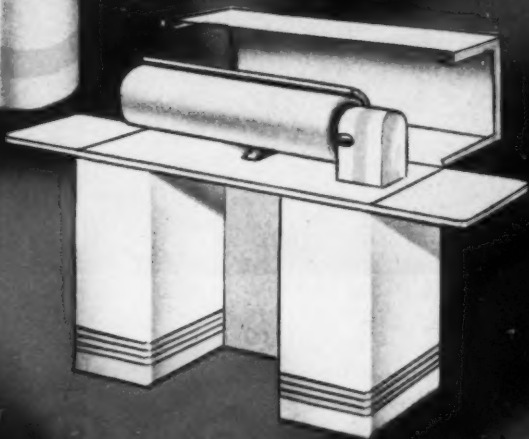
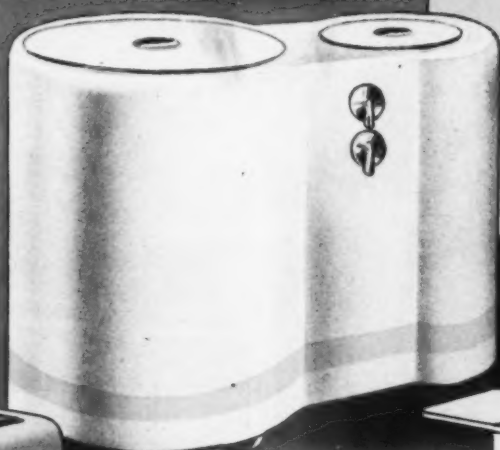
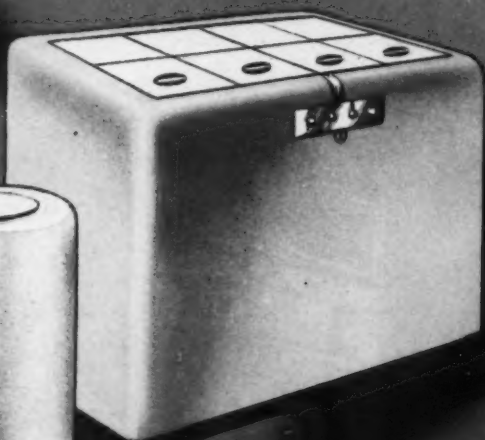
Corrosion—Strong, Durable—Economical.

In three color reproductions, it shows modern designs for a wide variety of products. First come the familiar household applications—then, products in the commercial field. These are followed by industrial applications, uses in home construction, architectural and special fabricated products, and then numerous "special" applications.

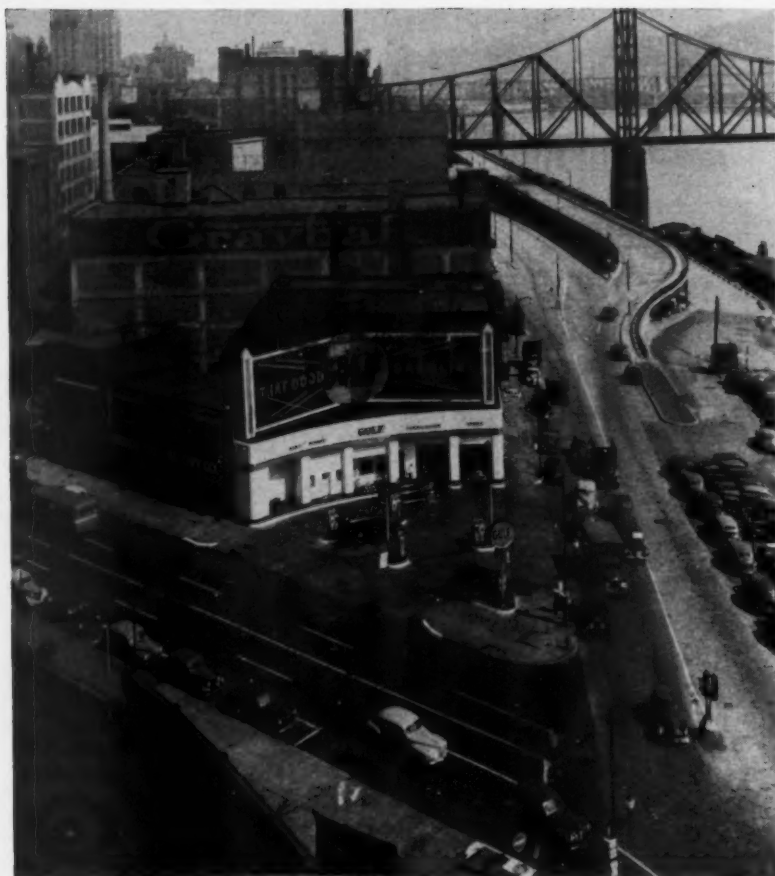
An eight-step photo caption story explains briefly but clearly the important steps in the production and application of porcelain enamel to metal parts.

If you haven't seen this booklet and made full use of its contents, you will want to get your copy now from the Porcelain Enamel Institute, 1010 Vermont Ave., N.W., Washington 5, D. C.





Gulf's "bright spot" at Pittsburgh's Golden Triangle



Left: Bird's eye view of the "point" of the Golden Triangle, Pittsburgh, Pa., showing the attention value of white architectural porcelain. Below: Closeup views of the Gulf station, both before and after the installation of architectural porcelain. Which one would YOU patronize?

ARCHITECTURAL PORCELAIN ENAMEL BY
THE ERIC ENAMELING CO.



GULF Oil Corporation for many years have had a service station at the intersection of Liberty Avenue and Water Street, which forms the "point" of Pittsburgh's Golden Triangle. Before it was modernized through the use of architectural porcelain enamel it was just another filling station, blending with the surrounding buildings and dependent entirely upon signs for attention value.

The accompanying photographs show what porcelain enamel can do to convert the "ordinary" filling station to a "bright spot" in important city locations. Not only does architectural porcelain afford the permanence and maintenance-free surface so important in business or industrial locations, but when used in colors contrasting with surrounding buildings it serves as an attention-getting invitation to every motorist.

Before the war porcelain enamel was fast taking the lead, both in new construction and modernization work of this type. With proper coordination of effort among the suppliers of architectural porcelain, this trend should continue post-war to the point

where the material will be considered "standard" for structures of this type. Its use should also spread to other types of structures where attention value, cleanliness and freedom from maintenance are equally important.



TAILOR-MADE

COLORS

FOR YOU

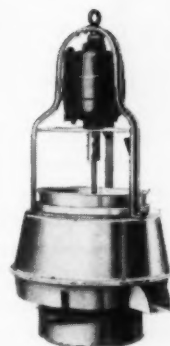
Color matching is a job you can rely on Drakenfeld to do promptly and with exactness, for tailor-making colors is a specialty with our technologists. *Accurate formulation* means colors fitted to whatever frits are required in your porcelain enamel production schedules. It assures you of dependable color strength and tops in uniformity. All in all, it means that Drakenfeld offers you reliable color service that helps save time, minimize rejects, and increase profits.

Whether you are producing porcelain enamel for signs or table tops, for architectural or industrial purposes, for home or professional utensils and appliances, your request for help in matching colors will be met with all the "know how" we have gained in solving thousands of color problems these many years. Although some colors are not available right now, it will be well worth your while to become acquainted with Drakenfeld service. Let us know your problem. Write today.

DEPENDABLE SERVICE ON: Screening Paste . . .
Graining Colors . . . Squeegee Oils and Mediums . . .
Spraying and Banding Mediums . . . Chemicals . . .
Rotospray Sifters . . . Porcelain Grinding Balls . . . Porcelain Mill Linings . . . Steveco Mills.

If it Flows ROTOSPRAY Can Strain It!

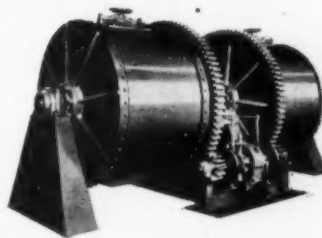
Saves time and labor. Strains through a vertical screen — no clogging. Long-life screen often saves enough to pay for the equipment. Standard and Junior sizes. May be suspended or placed on floor. Capacity ranges from 300 to 1,000 gallons per hour, depending on the nature and specific gravity of the product, screen mesh and size of sifter. Descriptive folder sent on request.



5 SAVINGS WITH STEVECO MILLS

Time
Labor
Horsepower
Floor Space
Initial Costs

Steveco high-efficiency duplex mills wet-grind porcelain enamel materials better, faster, and at low cost. Many outstanding construction features proved in hard day-after-day service in many plants. Wide range of sizes and linings, with all types of drives. Write for catalog, then let us study your grinding needs and recommend the correct type for your requirements.



YOUR PARTNER IN SOLVING COLOR PROBLEMS

Drakenfeld

B. F. DRAKENFELD & CO., INC.

45-47 Park Place, New York 7, N. Y.

Factory and Laboratories: Washington, Pa.

Pacific Coast Agents:

Braun Corp., Los Angeles 21 . . . Braun-Knecht-Heimann Co., San Francisco, 19



Electrostatic spraying of porcelain enamels

a detailed report on an investigation of a new method of enamel application

By James B. Willis • RESEARCH LABORATORIES, PEMCO CORPORATION, BALTIMORE, MD.

PART III — Conclusion

V. Data and Results (Continued) (6) Effect of Set

The results obtained on the effect of set are shown in Table IV. The weight of enamel is seen to increase slightly as the set increases. As indicated in Figs. 11 and 12, the degree of atomization was not affected by

TABLE IV EFFECT OF VARIATIONS IN SET				
Sample No.	Flow time (sec.)	Atomization	Enamel wt. (gm.)	Appearance of sprayed plate
82	22.7	3	45.6	Good
83	21.3	3	41.1	Good
84	18.5	3	40.1	Slightly dry
85	15.6	3	38.1	Slightly dry
86	12.2	3	38.1	Sagged
87	10.9	3	38.1	Sagged

changes in set. A high set generally gave the best sprayed results. Samples Nos. 86 and 87 could not be sprayed satisfactorily because the set of the enamel was destroyed to the point where the enamel would run off the ware as rapidly as it was deposited thereon.

(7) Effect of Fineness

The data obtained in this phase of the investigation is shown in Table V. Column (4) gives a comparison of the dry weight of the enamel deposited on each plate for each fineness, based on the total volume of the enamel sprayed from each sample. The

TABLE V EFFECT OF VARIATIONS IN FINENESS					
Sample No.	(%) Atomization	Enamel wt. (gm.)	Application (%)	Sprayed plate appearance	
77	15	3	539.3	33.7	Granular
78	10	3	549.7	32.1	Granular
79	5	3	536.0	28.8	Slightly granular
80	2	3	532.8	28.3	Slightly granular
81	2	2-3	538.3	34.1	Good

application weight on a percentage basis actually decreases slightly down through 2% on 200-mesh. The percentage application weight for the

samples 2% on 325-mesh is the highest in the series. The results indicate that enamel milled through a fineness above 5% on 200-mesh produces a granular sprayed surface which will not smooth out entirely on firing. With the more coarsely milled enamels, there was a slight reduction in the gloss of the fired enamel. As indicated in the Table V, there was no difference in atomization on any of the samples from 15% on 200-mesh to 2% on 200-mesh. The enamel ground to 2% on 325-mesh appears to be slightly less uniform in atomization than the remainder of the samples. Figures 13 and 14 are representative of the degree of atomization obtained in this series.

(8) Overspray

From the data obtained in determining what savings might be expected in the way of reduced overspray, a figure of 28.9% was obtained. Owing to the length of the field and the size of the sample plates used, this figure is somewhat higher than would normally be found in an industrial application. The amount of overspray probably would be reduced to as little as 15 or 20%.

(9) Spraying of Shapes

An opportunity was afforded from time to time to spray a variety of shapes. These included broiler doors, refrigerator inner doors, oven liners, architectural panels, and finally, a section of a lavatory. The size and shape of the majority of these pieces necessitated the use of multiple guns. A considerable amount of adjusting of the location and number of guns for each individual shape was necessary. Those pieces with flat surfaces and no protruding or recessed sec-

tions, and with simple flanges, were sprayed quite readily. Some difficulty, however, was encountered when using two or more guns spraying parallel to one another, in adjusting the position of the guns and the pattern of the sprays so as to prevent either an overlapping of the sprays, causing an excessively heavy deposit in one area, or a division of the sprays, causing a slightly lighter deposit in one area. A broiler door finished in this manner is shown in Fig. 15.

The variations in thickness of application cannot be compared in any way with those found in spraying paints and lacquers, because such minor variations as would cause rejection of ware finished in porcelain enamel would scarcely be noticed in lacquer finishes owing to their greater opacity or covering power.

Two of the sprayed shapes were formed in such a way that the surfaces were either embossed or corrugated; it was impossible by any manipulation of the location of the guns to fill in and around the radii of the recesses of these samples.

The lavatory section was found practically impossible to coat uniformly either by means of the electrostatic field or by the mechanical force of the spray, regardless of the location or number of guns within the limits of the equipment used.

(*) Process has some limitations to be rectified.

These difficulties which were encountered in spraying the various shapes represent limitations on the use of the equipment. Perhaps they might be more properly referred to as obstacles which must be overcome before maximum advantage may be taken of the process. It is evident

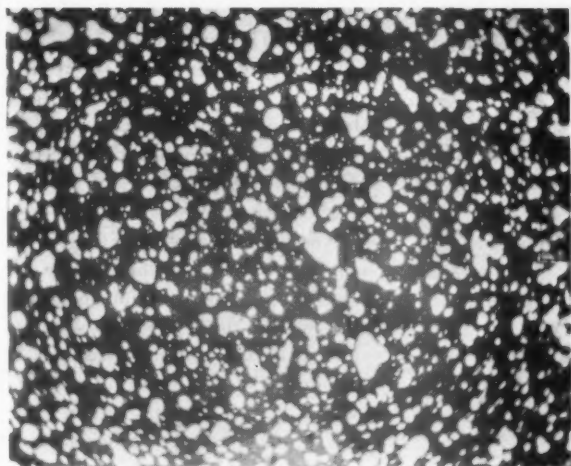


Fig. 11. — Atomization sample No. 86.

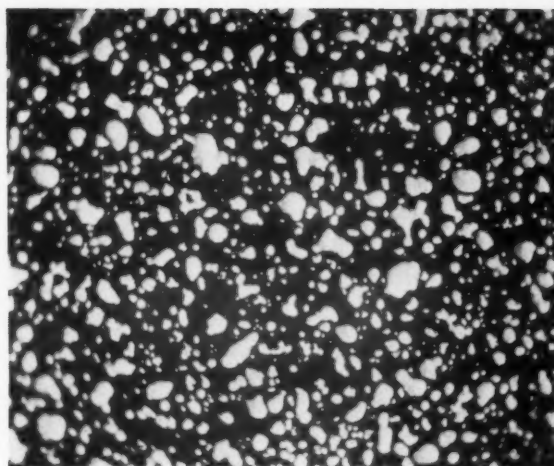


Fig. 12. — Atomization sample No. 83.

that, as in electroplating, protruding edges and recessed sections are quite difficult to cover uniformly. This may be rectified in the design of the electrode system to compensate for the difference in distance between the electrode and the grounded object or in the location and the number of guns used.

Cylindrical or similarly symmetrical shapes may be sprayed quite readily by causing them to pass through the electrostatic field while rotating on their axes of symmetry. Such shapes as thermos bottles, powder cases, and the like have been sprayed with paints and lacquers by this method with a great deal of success both to uniformity and savings of materials.

The spraying process and the ef-

fect of the electrostatic field are illustrated quite clearly in Figs. 16 and 17. The 10- by 18-in. broiler doors are being sprayed with a single gun at a conveyer speed of $2\frac{1}{2}$ ft. per minute. The process, of course, could be adjusted to any desired speed by the use of additional guns. Figure 16 shows the type of deposit obtained without the benefit of electrostatic field. These broiler doors are actually passing through the spray, although it is so fine that it cannot be discerned. The leading flange on the doors and the light deposit of enamel on the face toward which the gun is directed are clearly seen. The only flange covered by the spray is that on which the spray impinges.

Figure 17 illustrates the effect after the electrostatic field has been

switched on. The leading flange, which was formerly bare, has been completely covered. The spray has actually turned through 180 degrees and returned to cover this flange on the side opposite the gun. The top and bottom flanges (not shown in the figure) are also covered. Complete coverage of the broiler doors has thus been obtained on all flanges as well as on the face. The effect of the field can be seen plainly just opposite the first electrode wire. The force of the field has caused the spray to bend out of its path as quickly as it enters.

VI. Discussion of Results

The success of the operation depends to a large extent on proper care in the preparation of the enamel for spraying. To make certain that no

Fig. 13. — Atomization sample No. 78.

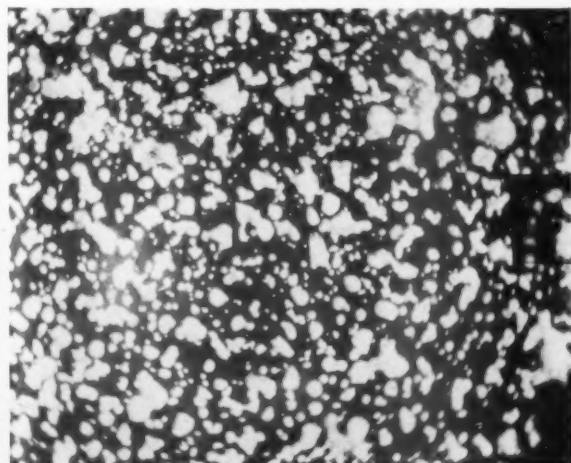
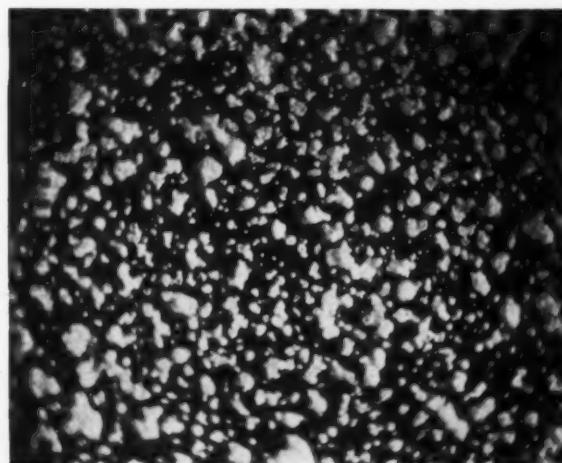


Fig. 14. — Atomization sample No. 80.



coarse particles are present which might cause stoppages in the spray guns, the enamel should be screened through a 40- or 60-mesh screen immediately prior to use. Control of the various physical properties of the enamel slip, such as fineness, specific gravity, and set, assumes an even greater degree of importance with this spraying operation than it does in the hand or mechanical-spraying operations now in existence.

(*) Atomizing and fluid pressures

In normal operations, atomizing pressures from 15 to 20 lb. are sufficient to provide the degree and uniformity of atomization required. Atomizing pressures in excess of 20 lb. increase the amount of overspray to the point where it appears to be excessive. For uniform results, atomizing pressures should not be allowed to vary from a given setting by more than $\frac{1}{2}$ lb.

Fluid pressures will vary from 6 to 13 lb., depending on the viscosity of the slip. Control of fluid pressures is one of the most critical phases of the spraying operation. Since comparatively small quantities of fluid are being delivered through each gun, any minor variation in fluid delivery through the guns will actually amount to a relatively large percentage of variation; and since the fluid pressure governs the volume of fluid being delivered, minute variations in the fluid pressure are evidenced as noticeable variations in the fluid delivery. Fluctuations in fluid delivery

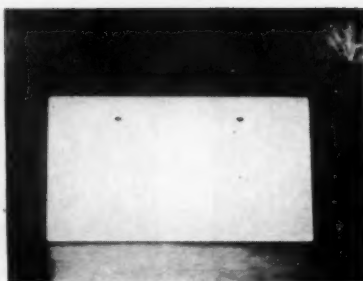


Fig. 15.—Electrostatically sprayed broiler door.

result in variations in the degree of atomization and so decrease the uniformity of the spray. An accurate pressure control system, then, is an absolute necessity.

Although the investigation indicates that the clay content of the enamel slip has a decided effect on the degree of atomization obtainable, the effect is not so severe as to make the elimination of clay from the mill additions essential. As a matter of fact, the presence of a small amount of clay in the milled enamel under certain conditions may have a slight tendency to improve the workability and the appearance of the sprayed surface.

(*) Specific gravity

requirements reviewed

To summarize the results of the portion of the investigation devoted to the effect of specific gravity or water content, when the specific gravity was below 1.60 and the set generally poor, the sprayed surfaces were

almost invariably too wet, the enamel running off the plate entirely in some instances while in others a severe sagging was noted. This sagging took place whenever the set was poor. The best samples were obtained at the specific gravity of 1.70.

In comparing the quality of the sprayed finish at each specific gravity with the volume of fluid being delivered to the gun at various pressure settings, the best sprayed samples were invariably obtained when the fluid delivery from the gun approximated 2 cc. per second. Closer scrutiny of these results indicated that all samples were generally poor when the fluid delivery exceeded 2.5 cc. per second or fell below 1.5 cc. per second.

The set of the enamel appears to play a relatively small part in the ability of the enamel to react to the electrostatic field, or in the degree of atomization obtainable. In view of the exaggerated tendency for the enamel to sag at the comparatively low specific used, a maximum degree of set must be maintained.

(*) Coarser milling

believed practicable.

Regardless of the fact that the data obtained would seem to indicate that enamel milled to a fineness above 2% on 200-mesh may not be used so successfully, it is believed that enamels may be sprayed equally well when milled to a fineness as high as 5% on 200-mesh. This conclusion is

to Page 50 →

Fig. 16.—Spraying process without electrostatic field.

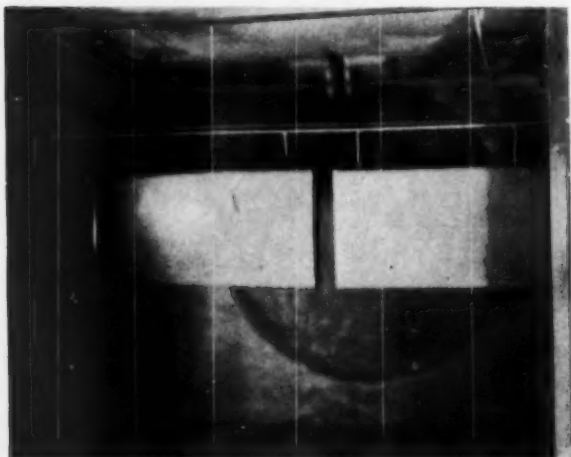
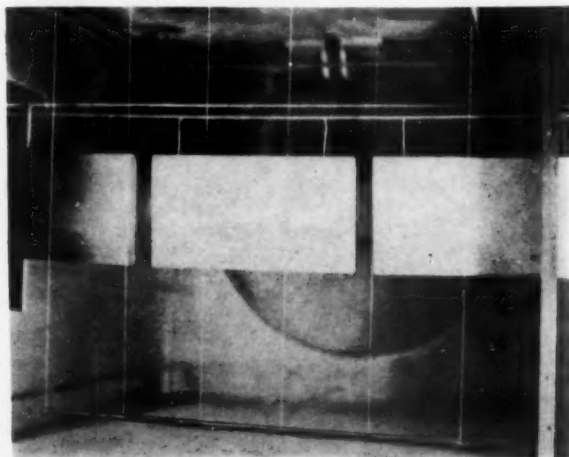


Fig. 17.—Spraying process with electrostatic field.



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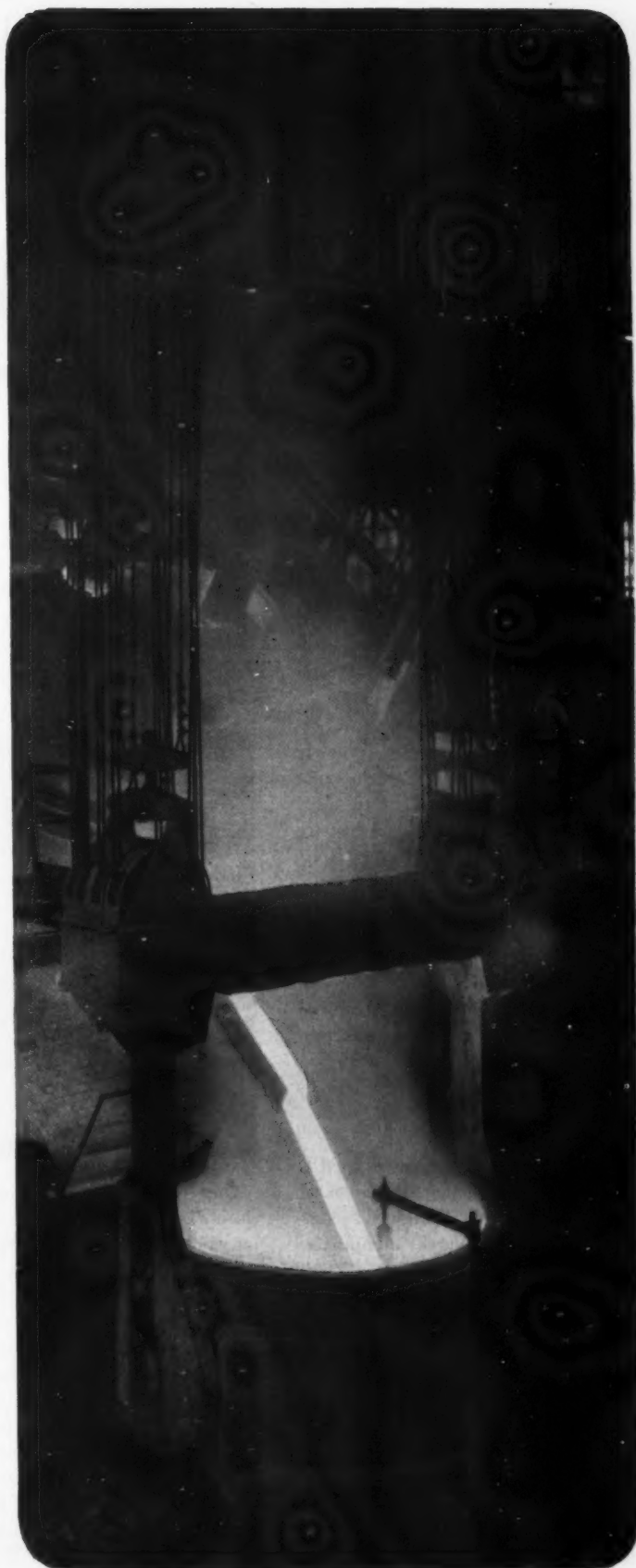
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NEWS

Juncker heads Servel's enameling activity

H. P. Juncker, for a number of years connected with Servel's enameling activity, is now general foreman of the enameling division.

A. Sheldon Lloyd heads the ceramic research laboratory, a newly formed division of the engineering department.

Arthur R. Dukes and Cecil Nix are day and night foremen respectively.

Battelle director honored

In tribute to his leadership in advancing industrial science, Clyde Williams, director of Battelle Memorial Institute, Columbus, Ohio, was presented the degree of Doctor of Science at recent convocation ceremonies of the Case School of Applied Science, Cleveland, Ohio.

The degree was presented by Dr. William E. Wickenden, president of Case, who cited Mr. Williams' accomplishments in research administration and in directing the activities of the War Metallurgy Committee of the National Academy of Sciences and the National Research Council.

Dr. Greaves-Walker returns to University of North Carolina

Dr. A. F. Greaves-Walker who, under a leave of absence from the University of North Carolina, has been with WPB in Washington dur-

ing the war years, is reported to be resuming his active work at the university as director of the Ceramic Engineering Department.

James E. Callahan returns



One of the many fine sons of men closely associated with the enameling industry recently returned on leave to his home in Peoria, Illinois. He is James E. Callahan, son of S. J. Callahan, purchasing agent at Altorfer Bros. Company.

Flight Officer Callahan, a navigator on a B-17 Flying Fortress, was shot down over occupied Germany on June 20, 1944, and interned in a German prison camp.

In answer to a request for brief details, his father said: "At the time, they were bombing the oil fields over

Madeburg, Germany. He had to hit the silks, and was captured by German authorities on that day and interned in Stalag Luft No. 3 in Sagan, Germany, for 11 months. On April 29, 1945, he was liberated by the Fourteenth Armored Division of Patton's Third Army, and while he suffered a lot of discomforts, I am glad to inform you that he arrived home, none the worse for his experiences."

Trojan Products sold

Diversey Corporation, a subsidiary of Victor Chemical Works, is said to have acquired the business and assets of Trojan Products & Mfg. Company, 3130 S. Wabash Avenue, Chicago. The twenty year old Trojan firm specialized in manufacturing chemicals for the metal working industries.

Acquisition of the Trojan company is said to have been accomplished to broaden the service of Diversey Corporation.

Personnel of the Trojan company will continue with the Diversey Corporation.

Investment companies acquire interest in American

Foundry Equipment Company

A substantial interest in American Foundry Equipment Company of Mishawaka, Indiana, has been acquired by First York Corporation and Utility Equities Corporation, two investment companies in The Equity Corporation Group, according to a joint statement issued by David M. Milton, Chairman of the board of the investment companies, and Otto A. Pfaff, President of American Foundry Company. The management of the American Foundry Co. remains as at present, according to the announcement.

Charles C. Wilson, former Michigan representative of Tappan Stove Company, has been appointed North Central Division manager, according to a recent announcement by Keith B. Miller, general sales manager at Mansfield.

Mr. Wilson has been active recently in setting up Tappan's gas range program at its Portsmouth, Ohio, plant.

Atlantic City Steel Pier has Home of the Century

The "Home of the Century," now being exhibited for the eighth consecutive year in the Steel Pier, Atlantic City, has been designed by William F. B. Koelle, designer of the Steel Pier, to show Atlantic City visitors what they can expect to find in houses built to sell for approximately \$8,500. More than 500,000 visitors are expected from June 15 through September. Included in this model home will be a gas refrigerator, an automatic gas water heater, and an automatic gas furnace.

Equipment for the "Victory Home of the Century" is said to have been selected on a basis of its practicality, economy of operation, initial

cost, and cost of up-keep. The gas range on display is built to the gas industry's "CP" standards.

West Coast Manager for Du Pont's Electrochemical Department

According to a recent report, Albert R. Tucker has been made West Coast manager of the Electrochemicals Dept. of E. I. du Pont de Nemours and Company of Wilmington, Delaware. Mr. Tucker's headquarters are at El Monte, California, site of the Du Pont plant.

It is reported that Polar Ware Company of Sheboygan, Wisconsin, are planning a new addition to their plant to cost approximately \$60,000.

Vicary and Wheeler form new corporation for porcelain enameling

D. D. Wheeler and J. W. Vicary, formerly plant manager and general manager respectively of Erie Enameling Company, have established a new company to be known as Ervite Corporation for the production and promotion of "engineered" industrial and commercial porcelain enamel.

"Dan" Wheeler, who will be vice president and works manager of Ervite, is a graduate ceramic engineer and is well known throughout the industry as a result of fifteen years' experience in the field.

"Jim" Vicary, a graduate in mechanical engineering and business administration, who has twelve years' experience in industrial engineering and marketing, is president.

When asked for a statement in regard to the company's plans, Mr. Vicary said: "In the realization that the porcelain enamel industry has long needed a thorough engineering approach to its problems, all the way from product design through to application by the ultimate user, the Corporation will be staffed with experienced engineers in all important positions, and will be able to offer its clientele services hitherto unavailable in the industry. . . ."

Ervite is constructing a complete new building three miles west of Erie, Pa., and executives promise it will be equipped with many innovations to make it a most modern and adaptable plant for porcelain enameling. Construction priorities have been granted, and it is expected that the plant will be in operation by late fall.

It is learned that Kenneth Smith, recently of Newcomb College, Tulane University, is visiting La Escuela Nacional de Bellas Artes, Tegucigalpa, Honduras, as a result of an appointment from the Department of State as a visiting professor of ceramics.

At the recent Canadian Gas Association convention at Murray Bay, Canada, plans were laid for progressive promotional activity to assist Canadian gas utilities and dealers in selling higher grade gas ranges in volume after the war.

For the housewife to see "what's cooking."



Hardwick Stove Company, Cleveland, Tenn., say they have taken a tip from polls, conducted by manufacturers and utility companies for the purpose of learning what women want in their postwar homes, in the design of this new gas range.

One of the features of the new range is windows located in both doors for the housewife to see "what's

cooking." The use of two thicknesses of glass, with an insulating air space between them, will be an interesting feature to observe in the stove industry.

The new gas range is a part of the "Stepsaver Gas Kitchen" designed by Hardwick and now on permanent display at the American Furniture Mart, Chicago.

SEVEN-LEAGUE

Seven-league boots are what you'll need, comes the shift from war to peace production. And Du Pont is ready to help you have them. Our technical men will assist you in selecting new procedures and the right materials to save you time, save you cost . . . get you under way fast!

For the future, Du Pont can be your single source of quality color oxides. Du Pont colors are standardized for hue, strength and stability. For samples, just write E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

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SAVE WASTE PAPER—VITAL TO WAR!

Army-Navy "E" to Automatic Washer Company



W. Neal Gallagher, president and general manager, Automatic Washer Co., Newton, Iowa, is shown here accepting the Army-Navy "E" production award on behalf of the men and women of the organization.

Plant expansion plans for Ing-Rich, Frankfort

Officials of Ingram-Richardson Mfg. Co. of Indiana, Inc., Frankfort, Indiana, have announced expansion plans now under way, including addition to buildings and the installation of major items of equipment such as a "U"-type continuous furnace, continuous pickling process, gas fired boiler, latest type spray booths, dryers, and other facilities. These expansion plans are being carried out to increase both the production and storage facilities of the plant to meet postwar demands in the manufacture of porcelain enamel frits and enameled products, according to the announcement.

W.P.B. permission has been obtained to construct a building 80' x 150' at the front of the plant to provide additional storage facilities and new offices for factory management personnel.

The new continuous furnace, now under construction, is expected to be in operation by the middle of September. This furnace, which is gas fired, has a clearance of 6½', said to be the highest of this type built to date, and has a firing zone 83' long.

Major products to be produced with this equipment are: pressed

steel sink tops, bowls, table tops and job enameling work on ranges, refrigerators, washing machines, etc.

Charles A. Dombach is now enamel plant superintendent for The Keeley Stove Company, Columbia, Pa.

American Radiator and Standard Sanitary Corporation has reported plans for a new \$175,000 addition to the Tiffin, Ohio, plant.

Hotpoint executive predicts new trend in appliance selling

Appliance dealers who, in pre-war built their profits on the sale of single appliances will find complete kitchen merchandising a natural step toward better store identification. This will make possible store demonstrations and displays to carry the burden of merchandising, rather than home canvassing or crew selling, according to Ward R. Schafer, vice president in charge of sales, Edison General Electric (Hotpoint) Appliance company. Instead of emphasizing the search for customers, the dealer will stress kitchen planning and cooperation with plumbers, electricians, and building supply concerns. These allied crafts will join in the promotion of

kitchen remodeling projects with the aim of selling their services to homes where appliance dealers make sales for complete kitchen ensembles, Mr. Schafer said.

Present indications are that almost all large stores in downtown city shopping centers will operate extensive kitchen and home laundry displays. These merchandising operations will be backed by dominant local newspaper advertising to tie-in with national all-electric kitchen trade and consumer magazine promotions. A result will be that outstanding department and furniture stores will attract thousands of women shoppers to see dramatic electric kitchens in action. Specialized appliance dealers operating in neighborhoods and smaller communities can cash in on this kitchen promotion if they offer plans by which their customers can procure complete kitchen installations, he said.

Asserting that facilities for complete kitchen merchandising, including product service and installations, were necessary for the highly competitive market that will develop after merchandise becomes plentiful, Mr. Schafer suggested that appliance dealers start planning now to gain the cooperation of remodeling contractors, building supply dealers and others who can make a profit on their line while joining in remodeling projects based on appliance sales. He said that planned appliance ensembles were available for homes of almost every price class, with groupings for moderate rental apartment buildings having an especially strong appeal.

"All building craftsmen will want to protect their end of home modernization, but they are not, as a class, interested in selling appliances. They should not be viewed as a threat to regular specialized appliance selling.

"Appliance dealers who can cooperate with builders and supply people will find that benefits result to both from an exchange of prospects. Of course, most kitchen sales will originate with the appliance dealers, because of their reputations and identification as specialists in appliances. Local conditions will determine the amount of inter-change with other

types of businesses that an appliance dealer will be able to cultivate," Mr. Schafer said.

International study of standards of measurements to be made

A conference of vital importance to the industries of the United States, Canada and Great Britain, at which long-standing differences in Anglo-American engineering practice and standards of measurement, which have impeded war production, are to be discussed, will be held in Canada this fall, according to the Combined

Production and Resources Board. All three countries are members of the board, which operates to coordinate production between them.

It has been estimated that historically-based differences in the design of screw threads alone in Britain and the U. S. have added at least \$100,000,000 to the cost of the war.

From the U.S. there will be representatives of the Army, Navy, Air Force, the Bureau of Standards and the American Standards Association, as well as from the automobile, aircraft and other industries.

may be only a few hundred yards behind actual battle lines. Many types of serums, as well as blood plasma and other first aid supplies requiring refrigeration, are thus kept available for immediate care of the wounded. The refrigerators are part of a prewar stockpile "frozen" by the government at the outbreak of the war.

Summer air conditioning report

John deB. Shepard, chairman of the Joint Committee on Gas Summer Air Conditioning of the Industrial and Commercial Gas Section and the Residential Gas Section of the American Gas Association has announced the publication of the Committee's report—Technical Advances in Gas Summer Air Conditioning. The Committee has carefully analyzed the possibilities of gas summer air conditioning which it is believed will be the greatest direct aid to the promotion of gas utilization in this field. The report is covered in seven chapters beginning with a review of postwar possibilities of gas summer air conditioning by Mr. Shepard.

This report will serve as a guide for company activities in the field of Summer Air Conditioning for Industrial, Commercial, and Residential gas installations.

Storm hits Columbian Enameling & Stamping plant

As a result of a recent severe storm in Terre Haute, Indiana, and vicinity, some damage was caused to the plant of Columbian Enameling and Stamping Company of that city.

According to a company spokesman, the storm blew off a small portion of the warehouse roof and caused moderate water damage. It was further stated that there was no interference with regular production.

Chicago Vit gets "E" award

It is reported that the Chicago Vitreous Enamel Product Company organization recently received the Army-Navy "E". Presentation ceremonies for the "E" award were held at the Cicero Stadium on Thursday.

Industry's answer to "front line" refrigeration



A unique "permanent" crate, housing an ordinary household refrigerator, is industry's answer to the problem of making properly refrigerated medical supplies quickly available to the wounded, even though the fighting front may shift several times during one day, it was revealed by the Norge division of Borg-Warner Corp. This company is presently employing these crates in the shipment of several hundred Norge refrigerators for use in Southwest Pacific battalion aid stations.

The wooden crate was designed primarily to adequately protect the

refrigerator from rough handling and at the same time make it quickly transportable from place to place as battle conditions might dictate. The refrigerator is bolted to the crate and is thus permanently housed during its period in service.

Salient features of the crate include front panel for accessibility and a built-in air vent, vital to the proper operation of mechanical refrigerators. Power is supplied by a portable generating unit.

According to Norge officials, the units are used wherever battalion aid stations are functioning—and that

July 5. John Harrington of Columbia Broadcasting System was the master of ceremonies.

Vollrath gets Army-Navy "E"

Announcement has been received from The Vollrath Company, Sheboygan, Wisconsin, of the awarding of the Army-Navy "E" Production Award to the men and women of the Vollrath organization. The production award was conferred on June 28.

G. C. Emmons has been engaged as consulting engineer in the reconversion of the Conlon Corporation, Chicago, to the manufacture of household washers, ironers and other appliances, Bernard J. Hank, president

and chairman of the board, announced.

Mr. Emmons was formerly a mechanical consultant for the Republic Steel Corporation; a factory specialist for Worthington Pump and Machinery Company; and in recent years has conducted his own engineering company in Kansas City and Chicago.

Mr. T. W. Allen, chairman of the Board of Proctor Electric Company, Philadelphia, Pa., manufacturer of electrical household appliances, announces the appointment of F. M. Cardeza, Jr., as purchasing agent for the company. Mr. Cardeza succeeds Dan Thompson, recently appointed New York district manager.

Frigidaire engineers.

The new guns worked. Immediately more guns were made. They too worked. Reportedly, the Army was elated, for this new gun provided an increase in fire-power equivalent to adding half again as many fighter planes on any mission.

Surely, say the manufacturers, Hirohito is going to need more than a white horse; and his tophatted, frock-coated gents who fish for sewer-carp in the royal birdbath will have to dream up something more potent than Fourth-of-July balloons to compete with this kind of Yankee ingenuity.

"Joe" Irwin to Clyde Porcelain

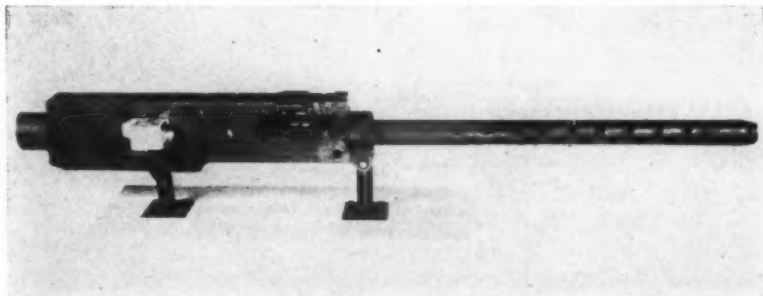
Joseph T. Irwin, for the past three years with the Rome Mfg. Division of the Revere Copper and Brass Co., as metallurgist in the development and production of rockets, joined the staff of the Clyde Porcelain Steel Corp., Clyde, Ohio, on July 15, as material control engineer and in charge of ceramics.

Mr. Irwin, "Joe" to his enameler friends, was for 14 years with Ferro Enamel Corporation where he was in charge of the analytical laboratory and in control of raw materials, and later did smelting, development work, technical service work and technical writing. In 1929 he went to Holland to start a Dutch plant. While there he also investigated clay deposits in the Vallendar district and aided in the development of an alternating current pickling system.

In the writing field Mr. Irwin has contributed two chapters to "Manual of Porcelain Enameling," edited by J. E. Hansen, and has made numerous contributions to porcelain enameling literature. He also served as secretary of the Central District Enamellers Club for two years prior to the present war.

With the addition of Mr. Irwin to the official staff, the management of Clyde Porcelain Steel states that the company has a well-rounded staff of engineers for the resumption of its manufacture of civilian consumer goods for the post-war market.

Twelve hundred .50 caliber slugs per minute from Frigidare built machine gun



Army Ordnance Department and Frigidaire Division of General Motors Corporation have lifted the lid of secrecy, unveiling for the first time a new, ultra-speed .50 caliber machine gun perfected by the Engineering Department of Frigidaire in collaboration with the Office of the Chief of Ordnance.

The new gun, already tested in combat, spews out .50 caliber slugs at the exceptionally high rate of 1200 a minute, 20 shots a second. This is 50% faster than the .50 caliber guns now in use. Some idea of the speed can be had from the fact that if the fourteen .50 caliber guns on a B-25 bomber were of this new type, it could shoot 280 of them in a short burst of one second.

The present .50 caliber gun, now in use all over the world, is the basic

weapon of the Air Corps. Frigidaire has already made more than 350,000 of them, and General H. H. Arnold has said, "The very low mortality rate among our bombers can be largely credited to this gun." Major General L. H. Campbell, Jr. of Army Ordnance, has stated that, ".50 caliber machine guns account for over 90% of all aircraft fire-power." From this it is quickly understandable what this increased firing rate will mean in annihilating Japs; destroying their aircraft and damaging railyards, supply dumps, factories of all kinds, and oil and gasoline storage depots.

The development and subsequent perfection of the new, ultra-speed .50 caliber gun to the point where it stood up under, and passed rigid Army tests, was accomplished only after months of laborious research by

Moore Enameling gets third Army-Navy "E" award

A report comes to *finish* concerning the third Army-Navy "E" award to The Moore Enameling and Manufacturing Company, West Lafayette, Ohio. This recognition follows the original award of March 25, 1944 and the second award on September 23 of last year.

Dr. Cook visiting Germany on Air Forces technical project



Dr. R. L. Cook, member of the staff of the Department of Ceramic Engineering at the University of Illinois, is on his way to Germany. He is to work on a project sponsored by the Army Air Forces, Air Technical Service. He left for Washington early in July and is scheduled to return late in September.

The work of the project is the translation and subsequent study of reports found in research laboratories and plants in Germany; of special interest will be work concerning ceramic materials developed for and used in combat equipment.

Norge to build rockets and refrigerator compressors

Completion of a Navy contract for 20-millimeter Oerlikon gun mounts makes it possible for Norge Corporation, Muskegon, Michigan, to start production on the "motors" (section of projectile containing impelling charge) for the latest type, 5-inch rocket, and on hermetic compressor

mechanisms for refrigerators in the same factory, according to Howard E. Blood, company president.

This will represent one of the early instances of side-by-side production of war and peace products under one roof.

Factors to consider in steel production

Reports to *finish* from executives of leading appliance manufacturing plants have all stressed the importance of sheet steel supply in relation to plans for expanded production.

Washington reports indicate that every effort is being made to "channel" a reasonable quantity of steel sheets into essential civilian production.

As a check at the production point, we discussed this problem with steel suppliers. As this issue of *finish* goes to press, there is nothing in this study that would offer too much encouragement for an early easing of sheets of the gauge used in appliance manufacture. As one steel company executive put it, "There have been in the neighborhood of a hundred hand mills torn down or otherwise taken out of service since shortly before the war. These will probably not be replaced because of the difference in production cost between hand mill and continuous mill operation. Before the war it appeared that there was more sheet steel capacity in the country than would be needed. Now, with no new added capacity for light gauge sheets, the picture looks quite different."

All orders for sheets except heavy hot rolled (15 gauge or heavier) were frozen for the third quarter on July 4.

It is reported that a new porcelain enamel jobbing plant — the Newark Porcelain Enamel Company — is to be located in Newark, California. Mr. Henry Fields, well known enameler on the West Coast, is reported to be one of the owners of the recently organized company.

George F. Henry Enterprises is newly formed company

One of the newest organizations for the distribution of appliances has been formed by George Henry, who has, for three years, been principal procurement specialist with the Jeffersonville Quartermaster Depot, Procurement Division. In this capacity he supervised buyers who procured several thousand items of supplies for the U. S. Army, Ordnance, and the Medical Corps. The items of pro-



FINISH PHOTO

curement ranged from kitchen ware to gasoline dispensing and handling equipment, to procurement of complete plants.

Mr. Henry has long been associated with the appliance business, having started as a salesman for a Crosley distributor in Wichita, Kansas, before he was 18 years old.

In 1932 he went with Great Western Stove Company, Leavenworth, Kansas.

In 1937 he joined the organization of Montgomery Ward & Company, continuing his association with the stove business.

From Wards he went to Dayton to join the Frigidaire organization, where he remained until the war broke and the opportunity afforded itself of using his knowledge of stoves and appliances for the benefit of the war effort. While at Frigidaire, George Henry not only broadened his experience in the sales and distribution end of the business, but

strengthened his knowledge of electric, gas and solid fuel heating and cooking equipment as regards manufacture, design and servicing.

With this background of experi-

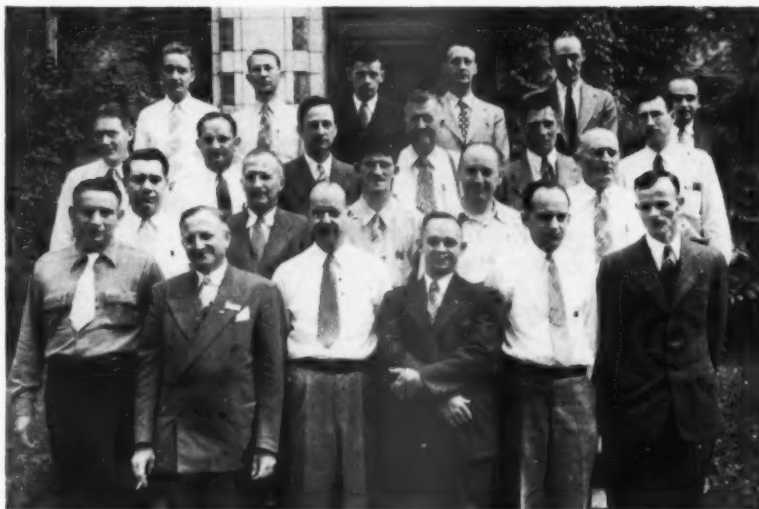
ence, George starts his new business in Chicago as George F. Henry Enterprises. His many friends in the appliance business will want to wish him success.

Gas ranges roll from American Stove production lines



Production of Magic Chef Gas Ranges is being resumed at American Stove Company's St. Louis, Mo., and Harvey, Ill., plants. Viewing the ranges as they come off the production line are the company's sales executives. Plans are also being made to increase production of coal and oil ranges to provide postwar employment for an increased number of people in all the company's plants.

E.U.M.C. meeting of technical representatives



*1st: R. Hultz, J. Vollrath, H. Boyer, L. Ashby, L. Housley, F. Buckalew.
2nd: J. Zimmerman, E. Dexheimer, A. Mallonn, P. Huppert, S. Chambers.
3rd: F. Petersen, F. Hodnick, G. Fohse, P. Mallonn, Mr. Peters, J. Theodore.
4th: E. Kelsey, E. Mulvane, M. Fisher, B. Kirk, E. Schwarz, C. Andrews.*

The third general meeting of the technical representatives of the companies belonging to the Enamelled

Utensil Manufacturers' Council was held at the Department of Ceramic Engineering, University of Illinois

on June 28 and 29, 1945.

Twenty-two men were present at the meeting which dealt with control in the enamel shop. A summary of some work done to determine the effect of coefficient of expansion on the properties of enameled ware was also presented.

The guest speaker at the banquet on Thursday evening was Mr. R. F. Bisbee of Westinghouse. Mr. J. B. Simons also attended and spoke to the men. This paper was very well received, since it pointed out how control can be used effectively in the enameling plant to produce better products more efficiently.

Also included on the program were: "Effect of Expansion on Thermal Shock and Impact Resistance," by F. A. Petersen; "Control in Frit Production," by A. I. Andrews; "Pickle-room Control," by C. M. Andrews; "Control of Enamels," by F. A. Petersen; "Control of Enameling," by F. A. Petersen; and "The Value of Control," by D. G. Bennett.

After five years of faithful work, the technical committee was given a well-deserved vote of thanks and a new group was appointed. The former technical committee consisted of: E. C. Dexheimer, chairman; H. C. Arnold; B. S. Kirk; E. H. Kelsey; P. A. Mallonn; and A. J. Vollrath.

The new committee is as follows: E. H. Kelsey, chairman; O. E. Mulvane; J. C. Vollrath; Lonnie Ashby; Paul Huppert; and Jack Zimmerman.

The gas industry's program to develop a much greater force of trained sales personnel than ever before in its history has been called to the attention of the Committee for Economic Development as a potent factor in creating more postwar jobs. The latter committee, which has functioned as a national organization since the war and is supported by many civic and business interests, has done much to make the country aware of its postwar responsibilities. The contact was made through a letter from Alexander M. Beebe of Rochester, chairman of the A.C.A. Postwar Planning Committee, to Paul Hoffman, chairman of the board of the Committee for Economic Development.

Reports from West Coast

enameling plants

a current picture of enameling activity obtained from plant executives

FROM OUR SAN FRANCISCO CORRESPONDENT

In order to keep finish readers up to date on current activity in enameling plants throughout the country, we will present viewpoints of enameling executives as they are made available. The following is the first of these reports.

The Editor

THERE seems to be little likelihood of any quick reconversion taking place in the sign business on the West Coast, with this part of the country still so deeply involved in the war with Japan, and scheduled to remain so. Sign manufacturers here are still in war production.

Electrical products executive sees rationing to sign customers

E. J. Walters, district sales manager of Electrical Products Corporation, one of the largest sign manufacturers, says they still have their factories "loaded with war workers and war orders." This applies to the several Electrical Products Company plants serving the far western territory with signs in normal times, 90% to 95% of them utilizing porcelain enamel. Walters says they are keeping up fairly well with their servicing and maintenance, but he sees little chance of getting into substantial new sign production for some time. It is possible, he says, that in August we may make a very few new signs. "But even if we had the complete green light and no more war work responsibilities, we still could not go ahead because it would be impossible to get enough materials for major production. Also, there is still a terrific labor shortage among skilled men here." Even if materials were available at source of production, peak load utilization of transportation facilities in connection with the war in the Pacific would make it impossible or next to impossible to get it here in sufficient amounts to do much

work. Walters believes "all manufacturers are going to have to ration customers for some time to come" as there is a terrific backlog of demand.

Manpower and materials the hold-back, says Mahoney

"Our war work has run out and we would be getting into peacetime production if we could get the materials we need, and the Government would lift restrictions on manpower," says Denis Mahoney of Payne-Mahoney, Oakland. This porcelain enameling firm is the only one in Northern California which has remained in production in its own field throughout the war, doing various kinds of porcelain enameling for the Navy and other government uses. With war orders ended for the present, Payne-Mahoney is doing what small amount of civilian porcelain enameling work, mostly in signs, that they can find material for. Since materials for civilian use carry no priority, Mahoney says their only source is where some company happens to have a surplus stock.

"We could make signs — plenty of them — if we could buy the metal. We should be doing three or four times the volume we are doing." The Manpower service allows this company only four men. "We should have fifteen to eighteen," Mahoney says. "There is such a backlog of demand for signs alone it is going to take us some time to catch up, even after we start full speed. We have stopped taking orders — we have so many orders ahead."

Payne-Mahoney plan to specialize on sign work for the period immediately following return to normal production. About half of their operations will be devoted to general jobbing, enameling on customers' own material, the other half to complete production in the plant. "After we

get caught up on the signs, then we'll start thinking of innovations."

Ferro of Oakland looks for big demand for architectural porcelain

Postwar plans of the Ferro Enameling Company in Oakland, California, lean heavily towards architectural work and lines are being laid in this direction now, although this firm is still deep in its war work. They are hoping soon to be able to start back into their normal business end, as before the war, they expect to do some interesting building fronts and other structural work. In selling they will utilize data on the way in which the jobs they did pre-war have stood up through the past five years or more. Officials of this company say they believe there will be "quite a demand" for architectural porcelain work in California as a result of the way this material has proved itself during the past half decade.

California Metal Enameling doing sign redesign job

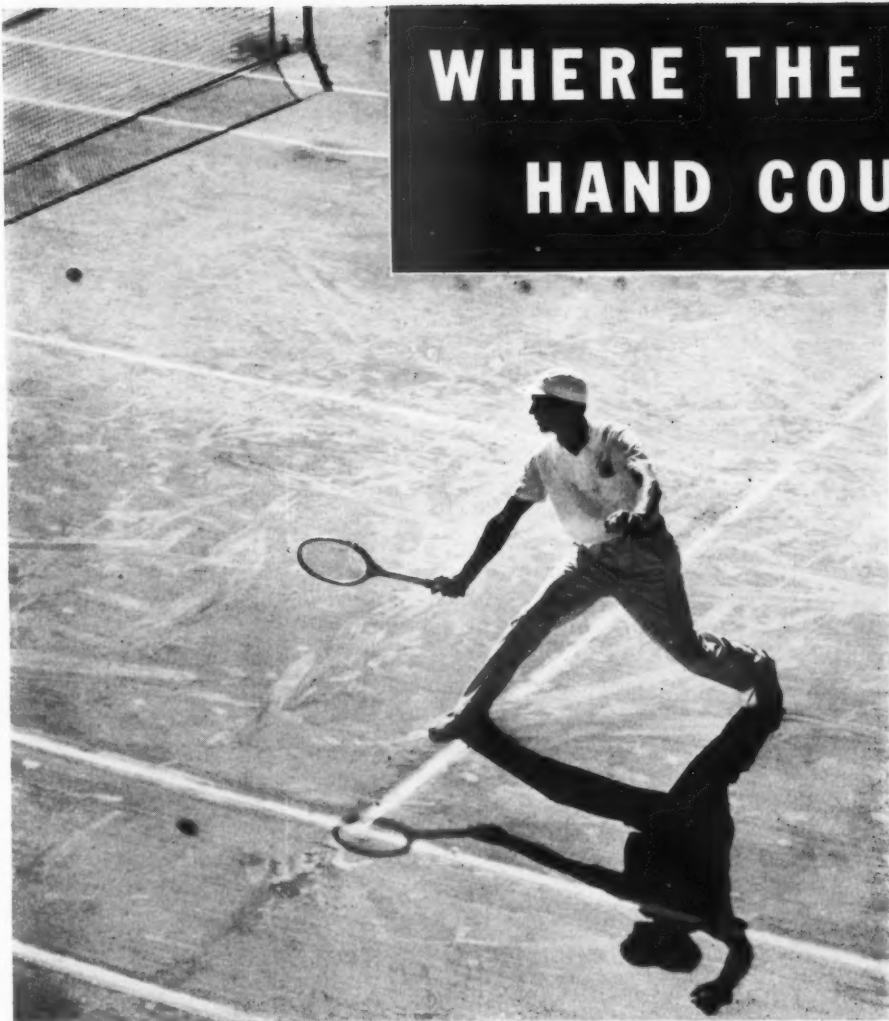
Automobile drivers in the State of California will have something new in the way of signs to look at along the highways before too long. A big highway sign redesigning job for the whole of California is in the works. The new signs, all porcelain enamel, will have bevelled edges and many of the latest improvements to bring California's already advanced sign program up to the finest anywhere.

California Metal Enameling Company, Los Angeles, which does the sign work for the two automobile associations of the northern and southern parts of the State, is engaged in the redesign work now. As soon as metal becomes easier, the first of the modern signs should begin to appear.

Penton visits "east"

Finish reports a recent visit from Joe Penton, president of California Metal Enameling Company, Los Angeles. Mr. Penton's trip included visits to enameling plants in the South and Mid-West.

WHERE THE BACK- HAND COUNTS



In tennis the backhand stroke is very important to retrieve certain shots; without it a player is at his opponent's mercy.

A porcelain enameler is at his customer's mercy when trouble crops out in his plant and he can find no remedy. There's no backhand to rely on in porcelain enameling, but the smart enameler uses dependable frits and supplies which help keep these troubles at a minimum.

Ingram-Richardson ground coat and cover coat frits will help you combat enameling troubles. We would be glad to hear from you concerning your requirements.



**INGRAM-RICHARDSON MFG. CO.
OF INDIANA • INCORPORATED**
FRANKFORT, INDIANA

A COMPLETE ENAMELING SERVICE

News from Washington

Scheduling sequence for steel

The sequence in scheduling unrated orders for steel has been explained by the War Production Board, which amended Direction 66 to Controlled Materials Plan Regulation 1. The direction previously had explained the scheduling sequence only for authorized controlled material orders. Amendment of the direction resulted from the "open ending" of CMP July 1 to permit deliveries of controlled materials on unrated orders.

The amended direction states that when a producer of steel in controlled material form is unable to schedule all orders that he has accepted in the month for which he accepted them, he should select the orders to be placed on the production schedule according to the following preference:

- (1) Carried over and current orders required to be filled by specific direction of WPB.
- (2) Orders bearing symbol "FCN" (further conversion) and CMP orders carried over from previous months except orders with a CMP allotment symbol including the letter "Z" (deferred orders).
- (3) Current CMP orders except those carrying the allotment symbol "Z".
- (4) CMP orders carrying the allotment symbol "Z" except stainless steel.
- (5) Unrated orders (including orders bearing the symbol "FCN").

Enameled ware production limited by materials supplies

The continuing difficulty of obtaining light-gauge steel sheets will prevent appreciable increases in enameled ware production for some time, despite the recent revocation of the enameled ware order, L-30-b, members of the Porcelain Enameled Utensil Industry Advisory Committee emphasized at a recent meeting.

Steel sheets of the type and quality needed by the industry are expected to be available only in sufficient quantity to fill orders against allotments under the Controlled Materials Plan in the third quarter.

The necessity of meeting urgent military requirements for antimony and antimony compounds will continue to limit the supply of these materials for civilian purposes, and the present system of allocating antimony (under M-112) for all requirements will undoubtedly be continued for some time, WPB officials pointed out. Before the war, U.S. supplies of antimony were obtained almost exclusively from China. The amount available from this source at present is negligible, officials explained. Enameled ware producers who have already effected some conservation of antimony and its compounds, will continue their efforts in this direction, the committee said, even though total usage by the industry is very small.

Pig iron production down

Pig iron production for the first five months of 1945 dropped 1,722,035 tons from the comparative 1944 period to 21,572,938 tons, WPB Steel Division officials said.

Consumption continued slightly in excess of production as indicated by April demands of 4,297,034 tons of pig iron as compared with 4,195,914 tons produced. Only 200 furnaces were in blast on pig iron in the middle of June, with 13 down for relining, and 13 others idle as a result of various factors, according to the report.

Production of domestic electric ranges may increase somewhat in the third quarter, but comparatively few are expected to reach retail channels, according to a prediction following a recent meeting of the Domestic Electric Range Industry Advisory Committee.

Electric ranges are not rationed, but the greater part of the programmed production (set at a maximum of 35,000 ranges for the quarter) goes to the military services, to housing projects approved by the National Housing Agency, and to institutions that certify need for use with existing electric service facilities.

Cast iron bathtub manufacturing controls revoked

(Revocation of Dir. 6 — L-42)

Control over the manufacture of cast iron bathtubs and restrictions limiting sales to specific types of purchase orders have been removed.

Production of cast iron bathtubs had been limited to the 50,000 specifically authorized in each quarter since January 1944, through directions to the plumbing and heating simplification order, L-42. Direction 6 to L-42, issued in March 1945, did not establish a fixed numerical quota, but required manufacturers to apply to WPB for authorization to produce cast iron bathtubs; it also limited sales to purchase orders from the military, for authorized construction projects, farmers whose applications had been approved by WPB, and other specified users.

These production and distribution controls have been removed by revocation of Direction 6 to L-42, effective June 29. However, the manufacture and distribution of cast iron bathtubs remain subject to all other applicable WPB orders and regulations, it was stated.

Group I labor areas declining

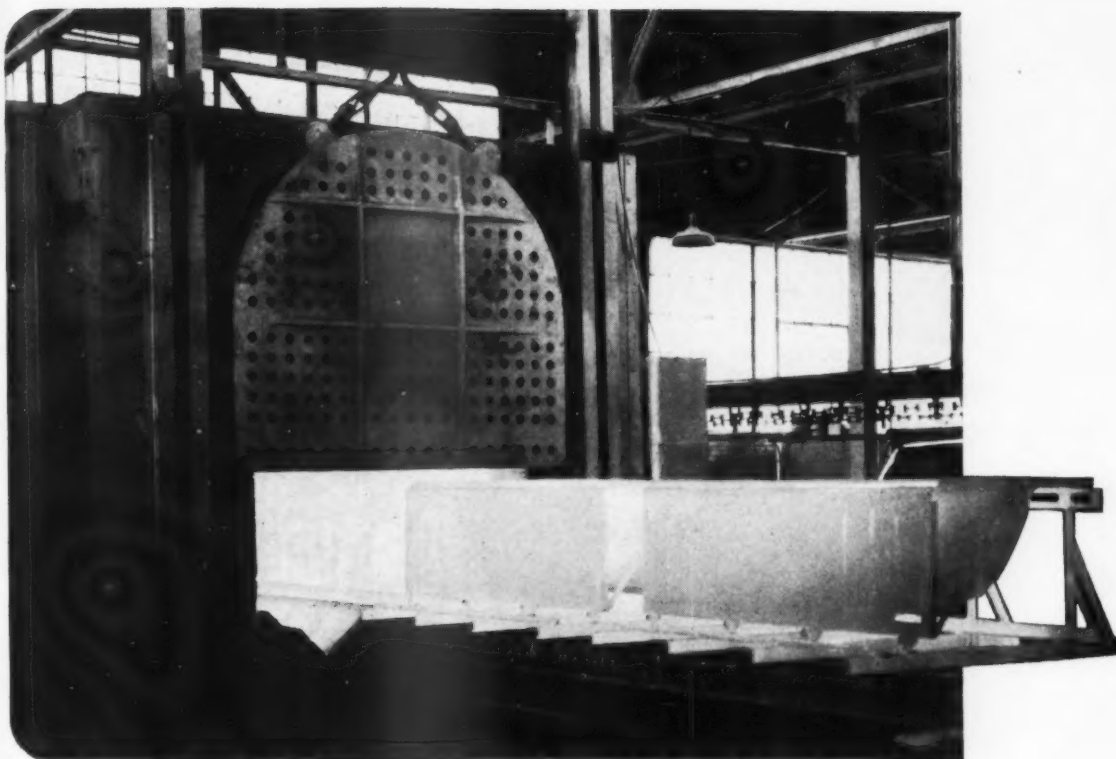
The number of Group I labor shortage areas in the country is expected to decline rapidly, according to the War Manpower Commission. The July WMC report on the adequacy of labor supply, measured against demand, showed that of the 302 classified areas in the country, 53 remain in Group I, as compared with 66 a month ago.

Group I areas are those in which acute shortages of labor exist or are anticipated. Changes in the list are normally announced at the beginning of the month, but in some instances, classifications of areas are changed between lists to reflect local labor market situations.

Water heater definitions changed (Order L-79 amended)

Water heaters subject to provisions of the order controlling the distribution of plumbing, heating and cook-

to Page 51 →



TRICKY SHAPES STAY TRUE TO FORM— when you're firing Toncan Enameling Iron

● Whether you're firing bathtubs, as shown above, or large flat wall panels, get the qualities of Toncan Enameling Iron that prevent warping and sagging after repeated firings. They can turn your percentage of rejects into a higher percentage of profits.

Toncan Enameling Iron is made with many special qualities to relieve the particular problems of enamellers. And there are bona fide production records to prove its results in overcoming fabricating, welding, deep drawing and firing problems.

It can be processed for high workability—uniformly free from hard spots—easy to fabricate by all methods. It can be made to take the deepest draws without strain-lining or cracking—or to

stay flat in large panel sections. It can be developed for high weldability. And it can be produced with any desired combination of these properties.

All these qualities of Toncan Enameling Iron come from years of specialization by one Republic-unit in studying enameling practices and making sheets that meet enameling needs best.

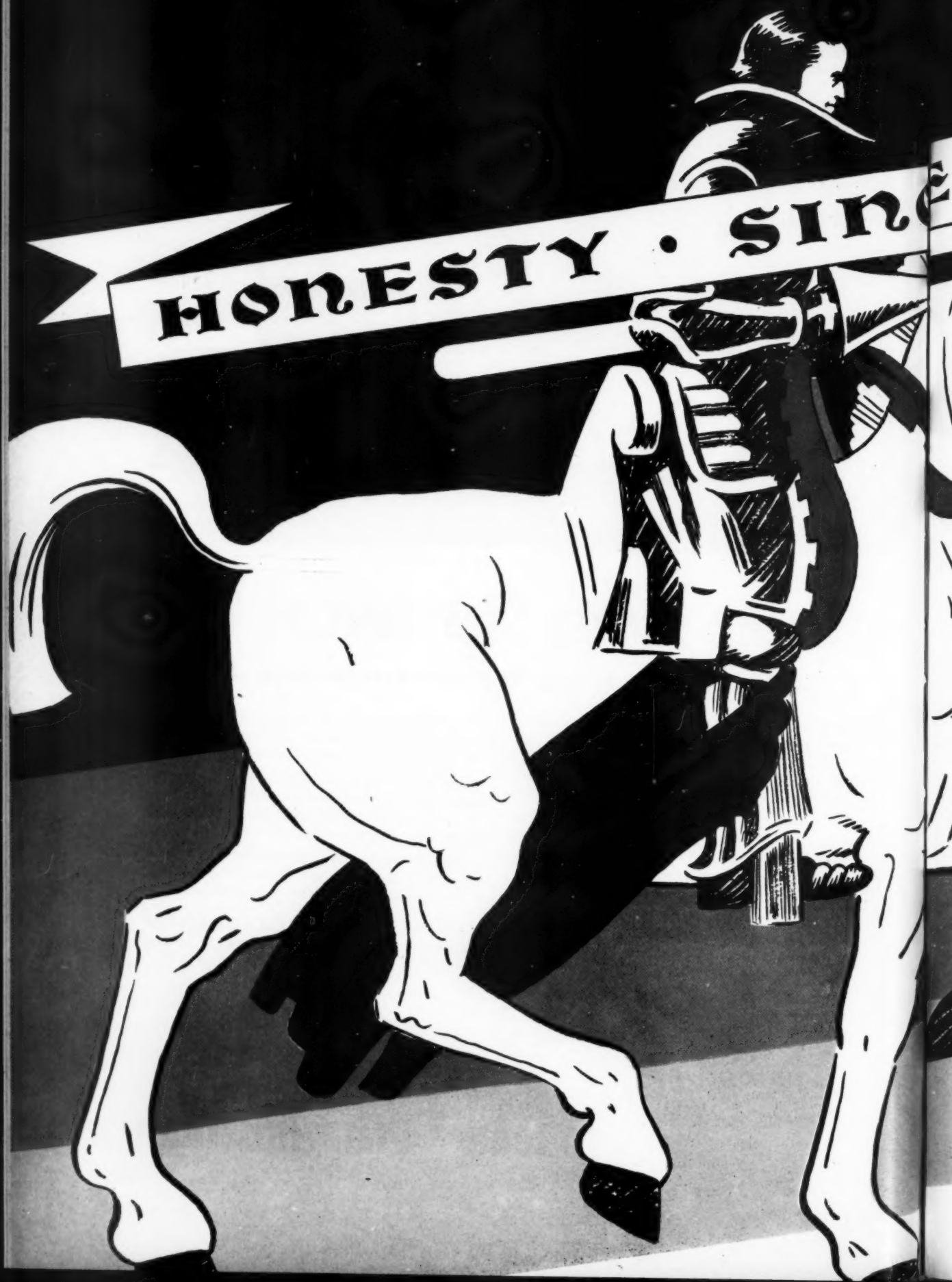
So, don't be satisfied with your present percentage of rejects. Check and see if Toncan Enameling Iron won't reduce that loss to an all-time low.

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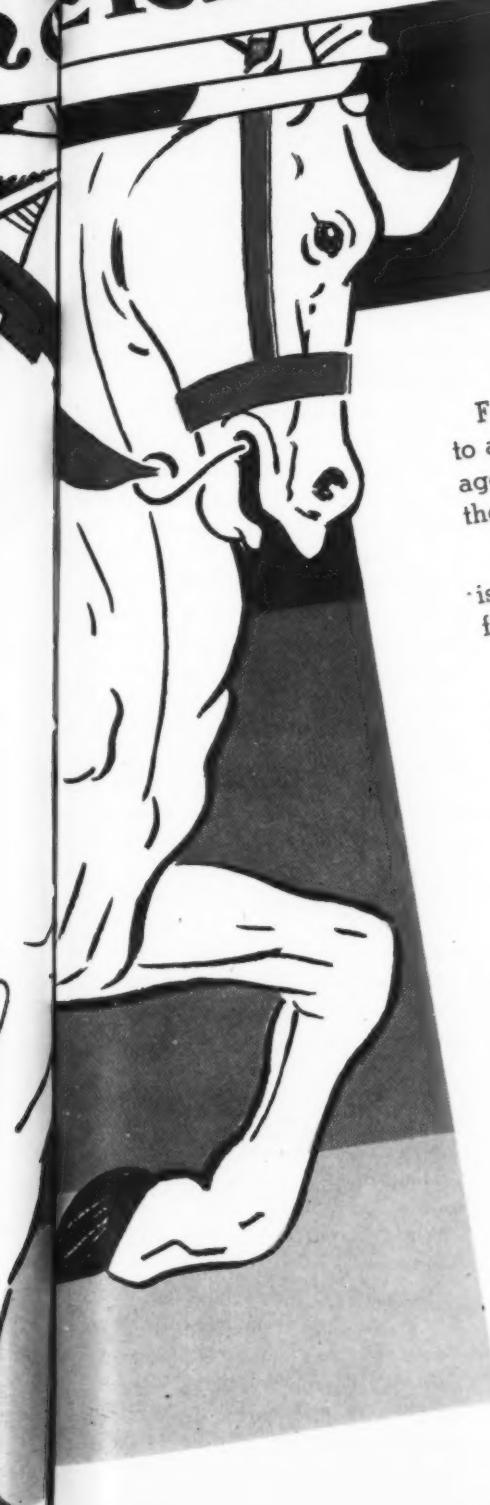


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TONCAN ENAMELING IRON



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Fused into every pound of frit we make is the devotion to an ideal—clearly defined, more than thirty-five years ago. It embraces HONESTY—LOYALTY—SINCERITY: the code of the honored knight.

HONESTY—with our customer, not alone because it is good business but because of a deep and abiding faith and pride in the quality of our products.

SINCERITY—free of guile and accentuated by the firm conviction that high sounding words have never corrected the flaws in a product.

LOYALTY—an abiding loyalty to quality standards, a code of service that sets apart this company.

These are the intangible things that have helped earn for Pemco its industry leadership. They emphasize a fidelity to a responsibility that, coupled with an instinctive and unfaltering desire to serve, instills a confidence that has never been abused.

To those, whom it has been our pleasure to serve, PEMCO has always been a vital and constructive force—a group of craftsmen imbued with the idea of quality accomplishment—conceiving with intelligent ingenuity—thinking and doing those things which admittedly promote the welfare of the industry.

PEMCO CORPORATION
BALTIMORE  MARYLAND

"ALWAYS BEGIN WITH A GOOD FINISH"

Homemaking and appliances

A psychological survey

(Continued from Page 21)

the same time a whole new generation of women is being educated to do work outside the home. Further, an increased desire for emancipation is evident. The attractions of modern living — magazines, books, radio, movies, sports, etc. — are incentives to free time.

Merchandise should be designed and presented to appeal to the women who wants not only time and labor saving devices but those which will make her home more individual and livable.

Believing as Dr. Dichter does that women's attitudes towards housekeeping jobs definitely influence their interest in household appliances, it is interesting to note that all but a few women do their own cooking, dish-washing, cleaning and dusting, shopping, sewing, and mending. These are basic tasks which a housekeeper can scarcely avoid.

Sixty per cent do all the washing and ironing while 25 per cent do part. Among those who do only part of the washing and ironing, the household linens and the shirts of the menfolk of the family are sent out.

Women like best to cook; this means a keen interest and knowledge of the range, refrigerator, and other modern utensils and cooking equipment to make the food preparation and serving efficiently done.

The chore most disliked is dish washing with ironing a close second.

Seventy-six per cent of the women interviewed or questioned said they liked washing clothes. Only 24 per cent said they really disliked it. This should be of interest to manufacturers of washing machines and ironers.

With the belief that more and more homemakers will continue to do all or part of their own housekeeping after the war in Japan is finished and fewer homes will have servants to do the housework, women will be more interested than ever in appliances that keep a household running smoothly with less wear on themselves.

In the second part of our survey women have told us what they want and will look for in household equipment. I'll tell you what they have told us in the next issue of *finish*.

What furniture manufacturers and retailers have to say about porcelain enameled table tops

(Continued from Page 25)

quiries among buyers brought answers predominantly in favor of porcelain enamel. It did show, however, that there is an increasing interest among buyers in the "new" materials such as the ones mentioned previously.

The questionnaire did indicate that, on the whole, furniture retailers use the words "porcelain enamel" for identification in advertising porcelain top tables more generally than is true with a great many other enameled products which they sell. This is based on general public acceptance of the porcelain enamel name for this use.

The personal survey

This survey was directed particu-

larly to the retail markets, merchandise buying offices and a few of the manufacturers in and around the New York and Chicago areas. Since these areas comprise a large number of outlets, it was decided to include them as a particular phase of the survey.

It was interesting to find that the major buying offices did not include such merchandise as breakfast sets, tables, etc., in their buying service. In most instances this type of merchandise was sold through the various furniture shows, or the direct efforts of the manufacturer. It would seem that a more extensive marketing plan directed to this group should bring excellent results for the indi-

vidual porcelain enamel table manufacturers.

Since 1941 there have been more than 3,000 retail furniture outlets developed and these, for the most part, are unfamiliar with porcelain enamel.

Perhaps we should elaborate on this statement a bit — we found that such retail outlets as credit clothing stores, some of the more important chains who operate nationally for instance, Grant's, Murphy's and others added furniture lines to maintain their peacetime volume and replace scarce items.

Next in importance are the specialty floor covering stores who feature linoleum, small odd furniture, and who will inevitably add kitchen equipment when it is available.

Another group that was called to my attention that was not included in the survey work is the chain gasoline and tire stores, such as Firestone, Goodyear, Atlantic, etc., whose post war plans are said to include the marketing of home essentials. It is assumed that refrigeration, radios, kitchen-cabinets, cabinet sinks, base and wall cabinets will be included in this program and here again the porcelain enamel industry have a fertile field.

Several of the most aggressive merchandising units in New York stated specifically their 100% preference for porcelain enamel. Despite the fact that considerable activity on the part of competitive finishes has been in evidence recently, *porcelain enamel* still holds first place in their future plans. In one instance, a buyer had procured several hundred enamel sheets last summer and had them enameled. On my visit a sample had been placed on the floor, with a card stating "The tables will be put on sale in four days." The daily shoppers during the morning had caused so much disturbance that the display had to be taken off the floor.

The personal survey indicated that the plastic top is undoubtedly the closest runner-up to porcelain enamel. One man interviewed stated that he expected to find a strong post-war demand for plastic tops "because of the excellent promotion work being

done by the manufacturer."

As to influencing factors leading to a choice of porcelain enamel, the following are listed in order of importance, based on personal contacts: Consumer acceptance; Exclusive qualities of porcelain enamel; Competitive selling price; and Retailers preference.

Included in the retail comments were commendations for the Porcelain Enamel Institute's labeling program.

One man said: The pre-war use of acid resisting labels . . . helps meet outside competition — our floor salesmen often pointed out to the customer, "Make sure it is acid resisting."

In general, answers to the questions asked by a personal interviewer showed a close correlation with the mail survey — so close, in fact, that further detailed comments would be largely a repetition of those mentioned previously.

While both the Chicago and New York surveys were intended as a study on the porcelain table top program, it can well be assumed that these same answers would apply to every other market where porcelain enamel is used as a finish.

The development of zircon as a versatile ceramic material

By

N. R. THIELKE AND H. W. JAMISON

From Abstracts of A.C.S. papers
47th Annual Program of the
American Ceramic Society.

Zircon has advanced from the status of rare mineral and semi-precious gem to a modern ceramic product with widely diversified application, due largely to the consistent effort toward locating commercial deposits in Australia, India, Brazil and the United States, and to the utility of increasingly efficient gravity, electromagnetic and electrostatic methods of beneficiation.

Zircon has found an important position in the field of specialized refractories in the phosphate, aluminum, precious metal, alloy casting, laboratory ware and related fields,

in the form of brick, crucibles, special shapes, molding sand and facing, etc. As a semi-plastic cement, zircon finds a large outlet as an electrically insulating refractory and as an investment medium.

Zircon is well known as a contributor of brilliance, hardness, craze resistance and improved mechanical properties to enamels and glazes. The field of opacifiers comprising zircon, double zirconium silicates and derived zirconium oxide has enjoyed

considerable study and promotion, especially during periods of critical demand upon tin and antimony oxides.

Zircon development keeps pace with current advances in special porcelains by its utility in the field of high physical and dielectric strength insulators and low loss bodies in high frequency electronic applications.

(This paper was presented at the May 11, 1945 meeting of the American Ceramic Society, Pittsburgh Section.)

Want better opacity at low cost?

Orefraction Zircon

A Zirconium Silicate of
MAXIMUM PURITY—MINIMUM CONTAMINATION

FOR ENAMELS AND GLAZES

Exclusive methods of preparation, patented equipment for separation and purification and petrographic and chemical controls assure you a trouble-free product.

Orefraction's new milling system produces a milled Zircon of exceedingly pure chemical analysis.

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Electrostatic spraying of porcelain enamels

(Continued from Page 32)

based on the fact that the enamels used in this phase of the investigation, having been prepared in 3-lb. laboratory mills, were composed of particles of frit of considerably greater average particle size than if large mills were used.

Mill additions other than clay have no apparent effect on the ability of the slip to react to the electrostatic field except as they may affect the set of the enamel.

Increased viscosity of the slip, contrary to what might have been expected, does not, within working limits, affect the ability of the enamel slip to atomize.

Difficulty will undoubtedly be encountered at first in determining the proper location and adjustment of spray guns to provide the desired degree of uniformity of application. When a standard operating procedure is established, however, a minimum variation in the finished quality may be anticipated.

VI. Conclusions

(1) The factors which make electrostatic spraying valuable in the application of organic coatings apply equally to porcelain enamel. The process can be satisfactorily used for spraying of enamels, and when properly used, produces a uniformly coated product with a minimum of loss due to overspray.

(2) Although the process appears to offer an appreciable savings in material consumption, proof of this fact may be obtained only through an industrial installation of the equipment.

(3) The process lends itself readily to the spraying of flat surfaces with simple flanges or to the spraying of symmetrical shapes, especially where the operation is highly repetitive.

This paper by James B. Willis was prepared for the 47th Annual Meeting of the American Ceramic Society. It was reprinted in full from the "Journal" by special permission. Finish desires to acknowledge, with thanks, the cooperation of the Society.

(4) In preparation of the enamel, the process necessitates no radical changes from the conventional mill additions which might affect equipment or layout planning nor does it involve extremely fine milling of the enamel.

(5) Accurate control of the phys-

California "packaged homes"

offers porcelain enameled opportunities

(Continued from Page 18)

Another good feature is plenty of closet, cupboard and storage space, lack of which is a fault in some prefabricated designs, and one which would make them unpopular with women.

Porcelain enamel in kitchen and bathroom only

The bathtub, kitchen sinks, and sanitary ware are of porcelain on cast metal. The drainboard, however, either due to the exigencies of war or the fact that a linoleum salesman did a better selling job than the porcelain enamel industry, is of linoleum rather than of the non-corrosive porcelain enamel most housewives would prefer. We are still referring to the existing "sample" home — not to postwar specifications which, like the homes, are flexible.

In the San Anselmo home shown in the photographs, the stove and the refrigerator have porcelain enamel finish. The house was furnished for show and display purposes. The producers of this pre-bilt home will not supply the furniture to buyers, who will naturally buy appliances locally.

The San Anselmo model is the first unit of Standard's designs to be constructed and set up, but it is one of six which they expect to have on exhibit in various towns when they really get into production. The designs are at present awaiting FHA approval as candidates for homes to be offered to veterans under the home loan program which will permit them to borrow up to 90% of the cost of a new home. Although the Standard

ical properties of the enamel slip used for spraying in this process, especially of the set and the specific gravity or water content, is essential to the production of uniformly satisfactory results.

(6) Each individual installation will require an adjustment in the number and location of the guns for most efficient operation.

Engineering packaged homes are produced in Sacramento, California, the plan is to send them all over the United States. Vice President Asbell says his firm is "prepared to sell all over the country." They are to be well advertised. Leibert & Caletti Company, San Rafael, are contractors for the set-up.

Within a short time after the assembly and formal opening of the San Anselmo home, 5,000 persons had been through it, including any number of servicemen and their families, civic and housing officials and other experts on housing, as well as local home-hungry men and women.

Asbell says they have already 500 inquiries in their files from persons who wish to know how, where and when they can get one of the homes; also, how much. The last question can't be answered yet, because the conditions under which this first test structure was produced and set up are not representative of what they may be a little later on; but the cost will be in the over-\$5,000 bracket, making it a fairly high quality home — and giving porcelain enameled a better opportunity than they might have in the more cheaply, mass-produced types of homes.

Porch suppers are the vogue for summer. If food is cooked or baked in porcelain enameled utensils, these same utensils may be used for serving, thus eliminating the time-consuming step of transferring the food to serving dishes.

→ from Page 44

ing facilities (L-79) have been re-defined to exclude types formerly covered by Order L-123, which was recently revoked.

Provisions of the order assigning

AA-3 ratings with specified exceptions to sellers for the purchase of plumbing, heating and cooking equipment (including repair parts) remain unchanged.

P.E.I. now has an architectural division

At an organization meeting at the Hotel Cleveland, Cleveland, Ohio, July 10, a new division of the Porcelain Enamel Institute was formally organized as the "Architectural Division." This move was made possible at a meeting of the Porcelain Enamel Institute Board of Trustees on May 22, when a resolution was passed to amend Section 1 of Article 1 of the corporation By-Laws, making possible the addition of "Sub-Division E." This offers the first opportunity for the engineers, manufacturers and sales outlets for porcelain enameled architectural products to meet officially as a part of the P.E.I. parent organization.

Spencer elected chairman



FINISHFOTO

H. R. "Spike" Spencer was elected chairman of the newly formed group for the ensuing year.

One important item of business was the appointment of a Specifications Committee, whose job it is to formulate general specifications covering the fabrication, enameling and erection of architectural porcelain enamel.

The prime purpose of the group, as outlined at the meeting, is to raise the general standard of all porcelain enamel installations through the co-operation of those companies whose primary interests lie in this field.

Market development included

Work of the Market Development Committee of the P.E.I., as it pertains to architectural porcelain, was outlined by R. A. Dadisman, chairman of the Institute's Market Development Committee. A great deal of constructive work has already been done by the Committee in the interests of this promising field.

Lower your rejects by making your enamels with

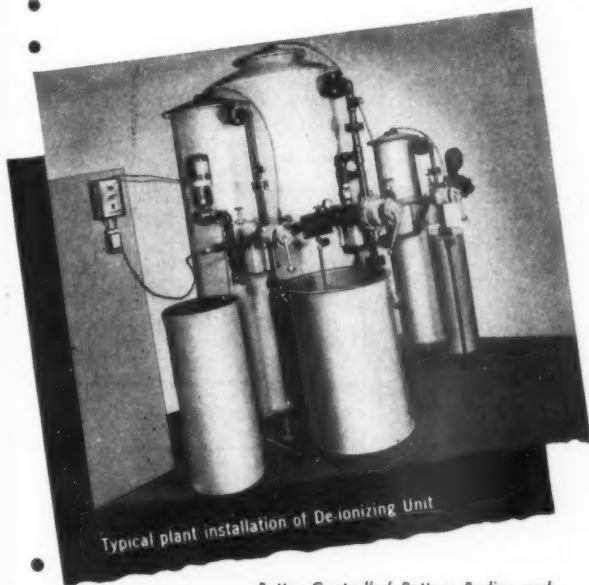
DE-IONIZED WATER

Reduction in rejects and elimination of copper heading have been obtained in leading ceramic plants when De-ionized Water was used in making the enamel. The varying acidic and basic reactions of natural waters affects the proper flocculation characteristics of frit and clay. Adjusting the enamel to make it function properly is costly as it requires materials and takes time.

You can assure yourself of a reliable water for enamel, by installing an ILLCO-WAY De-ionizing Unit. It will produce all the water your plant requires for capacity operation at a cost from 1% to 10% of that of distilled water. No fuel required, no cooling water. Maintenance is simple—no periodic dismantling for cleaning. Write for literature today!

Illinois Water Treatment Co., 866-B Cedar St., Rockford, Illinois

Water Treatment Engineering



Typical plant installation of De-ionizing Unit

Better Controlled Pottery Bodies and Glazes: ILLCO-WAY De-ionized Water can help the potter control his body and glaze compositions.